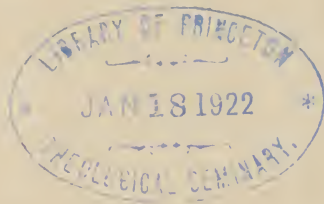


Things seen in Madagascar.



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By James Sibree



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THINGS SEEN IN MADAGASCAR

A PICTURE MAP OF MADAGASCAR

English Miles
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WILD DUCKS



OXEN



LOCUSTS



SNAKES



CARDINAL BIRDS



MOSQUITOES



HERONS



SCORPIONS



PARROTS



LEMURS



CROCODILES



BEES



AYE-AYE



WILD BOARS



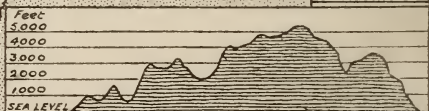
TORTOISES



WHITE IBIS



CENTIPEDES



THINGS SEEN IN MADAGASCAR

By JAMES SIBREE, D.D., F.R.G.S.

For fifty-one years L.M.S. Missionary to Madagascar,
Author of "A Naturalist in Madagascar."
"Madagascar Ornithology," etc.

With numerous Illustrations and Pictorial Map

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INTRODUCTORY NOTE

Most of the chapters in this little volume were contributed to the monthly magazine *News from Afar*, issued by the London Missionary Society. I have had the pleasure of finding that these papers have interested many boys and girls, and I hope that as they are now re-issued in a more permanent form, together with some additional chapters, they may be re-read, and also give pleasure to others who have not previously seen them. Possibly, even, they may also interest "children of a larger growth."

All the things described are found in the great island of Madagascar, where I have had the privilege of being a missionary during more than fifty-one years. I want my readers to feel that the "works of the Lord are great, sought out of all them that have pleasure therein." If this little book helps them in any way to do this, and especially to take more interest in the country which is so often referred to in these pages, I shall not have written them in vain.

I have to thank Mr. Service, of Seeley, Service & Co., for kindly allowing the use of several illustrations taken from my book, *A Naturalist in Madagascar*.

J. S.

THE CHAMELEON

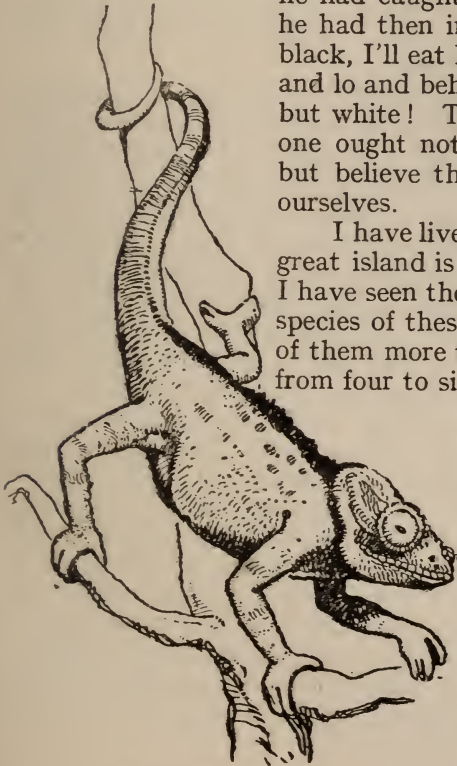
AN ANIMAL WHICH CHANGES COLOUR

MANY boys and girls, I expect, have learnt, or at any rate have read, a story in poetry about two men who were warmly disputing together about the colour of the chameleon. One of them insisted that it was blue, and the other was positive that it was green. While they were almost quarrelling about it, a third person appeared, and they agreed to abide by his verdict on the matter, but he had a different opinion about it from either of them, and told them that he had seen one last night, and that it was neither blue nor green, but black! and more than that, he had caught the chameleon and put it in a box which he had then in his pocket, and, said he, "If it is not black, I'll eat him!" He immediately opened his box, and lo and behold, it was not blue, nor green, nor black, but white! The moral of the story, of course, is that one ought not to be too positive in one's own opinions, but believe that other people may be right as well as ourselves.

I have lived many years in Madagascar, and as that great island is one of the chief homes of the chameleon, I have seen them times innumerable. More than twenty species of these little animals inhabit the country, some of them more than a foot long, while the majority are from four to six or seven inches.

I cannot say that I have seen quite the changes of colour spoken of in the story, and yet there are very remarkable variations of tint in the skin of the chameleon. Their usual colour is green, but there are also patches of yellow, red and black; and their colour does change very quickly according to the place they are clinging to, whether a green leaf, or a dark brown branch, and also according to the light to which they are exposed.

While staying at our L.M.S. Sanatorium about 1913, I noticed on one of the paths near the woods something very unusual, and on looking closely at



The Chameleon

From a "A Naturalist in Madagascar," by permission of Seeley, Service & Co.

it, I saw that a pretty little snake, very common in the country, had caught a chameleon, and had coiled round it two or three times, and was evidently just preparing to swallow it, although it seemed impossible for so small a throat to take so bulky a mouthful.

As we all pity the weaker side, I uncoiled the snake with the point of my sun-umbrella and drove it away. But it was this fact that struck me as very curious ; the chameleon was perfectly white ! white evidently with terror in the clutch of its enemy. I carefully placed it on a bush, and in a few minutes it gradually regained its usual colouring of green and yellow and black, as its fears passed away. (Some of my friends ask me : "But what about the snake ? was it fair to deprive him of his lawful prey ?" Well, I will leave you to answer this question.)

Many of the Madagascar chameleons have very strangely shaped heads ; some are covered with a kind of shield ; others look as if they had two long noses like spikes ; and others have curious horns. Some of the larger kinds have the ridge of the back serrated like a saw ; while the eyes each move separately, as if quite independent of each other.

But perhaps the most remarkable thing about the chameleon is its tongue ; this is nearly twice as long as its body, and it is shot out with such rapidity that the eye cannot follow it as it darts out to catch a fly which seems far enough away to be quite out of danger. But at its tip there is some sticky substance, with which master fly is caught. This rapid movement of the tongue makes up for the slow and deliberate movement of the chameleon's body, as it steps slowly and cautiously along the twigs and branches of the trees. This slow progress of the little creature has attracted the attention of the Malagasy, who have a proverb which (translated into English) says : "Act like the stepping of the chameleon : look where you are going ; look back the way you have come ;" thus advising foresight and retrospect.

Like all the reptiles, the chameleon lays eggs, and these are like a small bean in size, and are enclosed in a leathery skin or shell. I have seen them digging holes in the pathway to deposit these eggs, which are hatched by the heat of the sun, and while engaged in this work the chameleons are reddish-brown in colour, so as to be very like the red soil in which the holes are dug ; the reason of this is no doubt that they may escape the notice of their enemies, the hawks flying overhead, or the little snakes that glide out of the grass.

A baby chameleon, about an inch long, such as I have seen in our garden at Antananarivo, is a very pretty little creature ; its long tail, coiled round a twig, seems to serve it like a fifth hand. Naughty little native boys are fond of making the male chameleons fight together, and it is curious to see how widely the red mouth is opened at such times.

We cannot, of course, give any blame to the Chameleon for using, in self-defence and concealment, the power of changing his colour according to his surroundings. He has no weapon in the shape of claws, or teeth, or sting, as many living creatures have, and so he has been provided with this means of protection. But in certain respects we, as human beings, should not be like him in changing our words or our minds so as to be just like the company we are in. Don't you remember how honest John Bunyan described such characters when he speaks in the "Pilgrim's Progress" about "my Lord Turnabout, my Lord Timeserver, Mr. Two-tongues, and Mr. Anything"? We must not be afraid to hold our own opinion, for fear of offending others, when our conscience tells us we are in the right. We must not say, "Do as the Romans do."

THE AYE-AYE

AND ITS WONDERFUL HAND

THE great island of Madagascar contains many animals and birds, and insects also, which are found nowhere else in the world. Among these rare creatures there is perhaps no one more curious in its habits and structure than that called the Aye-aye. This animal's name, it is said, is taken from an exclamation of surprise used by the forest dwellers when they see its manner of obtaining its food. It belongs to the quadrumana or four-handed animals, in which class are included the monkeys, the apes,



The Aye-Aye.

Some of the Malagasy believe that the spirits of their ancestors dwell in this animal.

the chimpanzees, and the gorillas. We have none of these living in Madagascar, but the island is the home of the pretty, gentle lemurs, of which there are about forty species, some of them being as big as a large dog, while others are no larger than a rat, but are the prettiest little creatures you ever saw, with large and brilliant eyes.

A near relative of these lemurs is the animal I want to tell you about, but it is very different from them all, as we shall see.

The aye-aye somewhat resembles a large cat in size, being about three feet in total length, of which its large bushy tail forms quite half. Its colour is dark brown, the throat being yellowish-grey, while a silvery grey appearance is given by many white hairs on the back. Its structure presents very interesting illustrations of the way in which limbs, eyes, ears, and teeth are all modified to serve special ends.

The food of the aye-aye consists of wood-boring larvæ or grubs, which tunnel into the wood of certain trees. To obtain these the animal is furnished with most powerful chisel-shaped incisor teeth, with which it cuts away

the wood and bark. As, however, the grub retreats to the far end of its hole, one of the fingers of the aye-aye's hands is slightly lengthened, but much diminished in thickness, and is furnished with a hook-like claw.

Thus provided, the finger is used as a probe, inserted in the tunnel, and the dainty morsel is drawn forth from its hiding-place.

There are also other modifications of structure, all tending to the more perfect accomplishment of the purposes of its creation : the eyes being very large, so that it may easily see at dusk or by night ; the ears widely expanded, so as to catch the faint sound of the grub at work inside the tree ; and the thumbs of the feet, or hinder hands, being large and strong, so as to enable the animal to take a firm hold of the tree while using its teeth to cut into the wood.

Careful observations were made for several months of an aye-aye which was brought alive to England, and lived for some time in the Regent's Park Zoological Gardens. The probe finger was used as a scoop when the aye-aye drank water ; it was carried from the water to the mouth so quickly, that the liquid seemed to pass in a continuous stream. A remarkable fact has been pointed out in the structure of the lower jaw, namely, that the two sides are only joined together by a strong ligament, and do not, as in other animals, form one connected half-circle of bone. This partly accounts for the prodigious power of gnawing that the aye-aye possesses ; it was seen to cut through a strip of tin-plate nailed to the door of its cage.

The animal, though not scarce, is difficult to obtain, as it comes out from its retreat only at night ; besides which, the forest people have a superstitious fear of it, so that even a large reward is often insufficient to induce them to attempt its capture.

The aye-aye constructs true nests, about two and a half feet in diameter, which are found on trees in the dense parts of the forest. Near the coast these are composed of rolled-up leaves of the travellers'-tree, and are lined with twigs and dry leaves. The opening of the nest is at the side, and a small white insect called *andaitra*, probably the larva of some beetle, forms the animal's chief food. It is said to be very savage, and strikes rapidly with its hands. The coast people believe it to be an embodiment of the spirit of their forefathers, and so will not touch it, much less do it an injury, and if they attempt to entrap it, they think they would surely die in consequence ; and their superstition extends even to its nest.

THE GREAT AFRICAN ISLAND

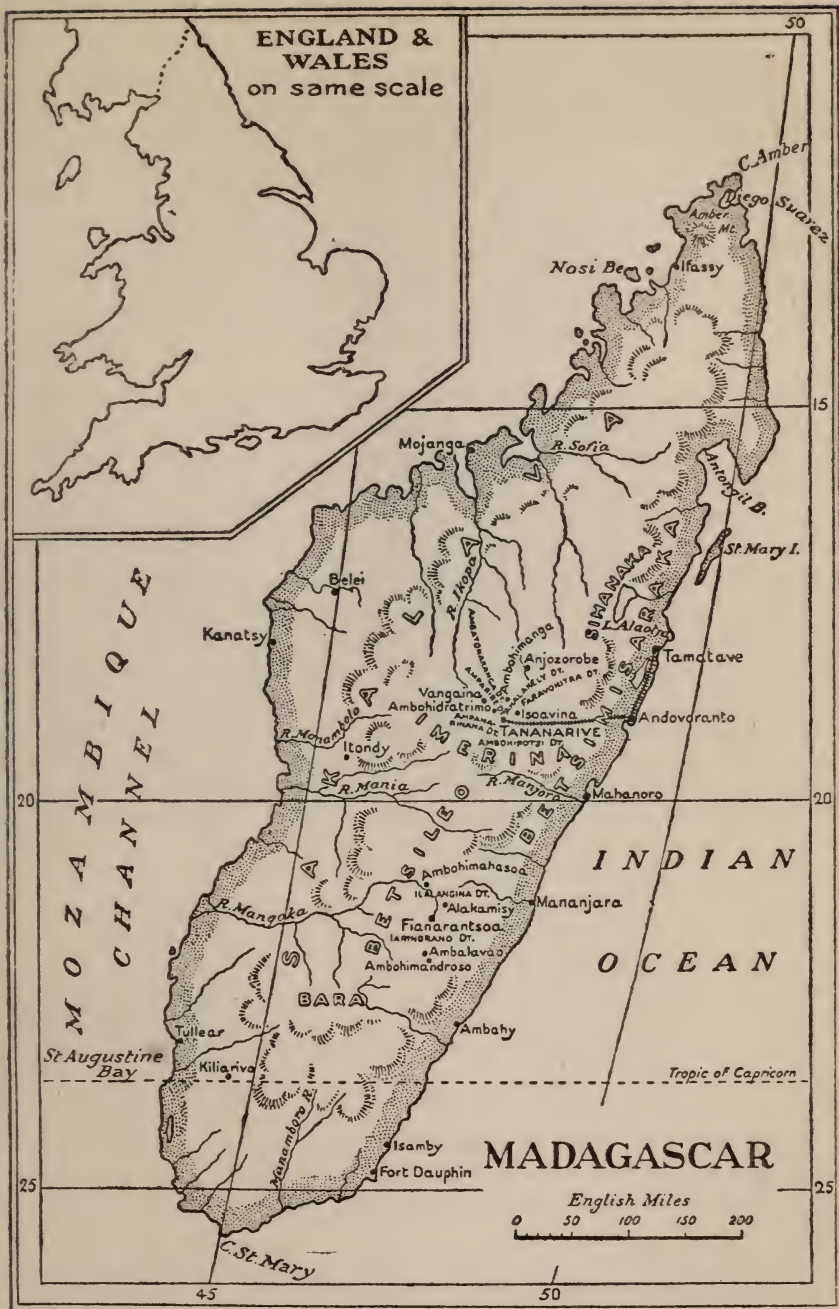
SOMETHING ABOUT THE COUNTRY

IN the two papers you have already read I have told you about some of the interesting animals which are to be found in Madagascar; but before you go further into the contents of this little book, I think it will be well to say something about *the country* where these creatures live, so that you may understand more clearly their surroundings. And if you will also study attentively the map which is given herewith, that will still further help you to realise what the great island of Madagascar is like.

First then, remember that it is the third largest island in the world, New Guinea being the first in size, then Borneo, and then Madagascar. People are often surprised to hear that it is just a thousand miles long, about 250 miles in average breadth, and is nearly four times as large as England and Wales. I was once asked whether it was not about as large as the Isle of Wight! And the reason of such mistaken notions about it is, no doubt, that on maps of the world or of Africa, it seems so small compared with the great "dark continent," with its five or six thousand miles of length and breadth. But if we put beside it a map of our own country to the same scale as you see on the next page, we realise how large it really is.

There are three or four noteworthy facts in the physical geography of Madagascar which it will be well to keep in mind. The first of these is that all round the island there is a belt of forest, which you must cross from the coast to get into the interior. This forest-covered country is densest on the eastern side; at one part, towards the north, it is forty miles across, but it is much less further south, and for four or five hundred miles it divides into two lines, of which the lower one is the widest. On the western side of the island the woods are not nearly so dense; for over a considerable extent of the coast plains it is rather a wooded country, with scattered clumps of trees, and among them groups of fan-palms, tamarind-trees, baobabs, and the Madagascar spice-tree, of which the leaves, the bark, and the fruit are all fragrant.

A great part of the interior provinces of Madagascar is of bare, moorland country, rather uninteresting in appearance, but with many pretty spots in the river valleys, and often with grand masses of granite rocks rising up, which are sometimes like great castles, and in other places like a huge cathedral. These granite masses are very often like immense "bosses" of rounded rock. In the interior districts of Imèrina and of Bétsiléô, which are the London Missionary Society's chief fields, we are from 4,000 to 6,000 feet above the sea, so that, although we are within the tropics, we have a very pleasant



temperate climate, with no extremes of heat or cold. I have never seen snow or ice in Madagascar, although heavy hail-storms are frequent at certain times of the year. The highest mountains are about 9,000 feet in height above the sea.

Another noticeable fact in the physical geography is the presence of a large number of extinct volcanoes. Happily, these are now quiescent, but we are reminded occasionally by slight shocks of earthquake that there are still tremendous forces underground; and the numerous hot-springs also tell us of great heat far below the surface. Madagascar is the centre of a belt of volcanoes, at the two extremities of which there is still an active volcano. These points are Great Comoro to the north-west, and Réunion, 450 miles away to the east.

You will notice on the map that there is a remarkably straight line of coast on the eastern side of Madagascar, which extends for about 740 miles. The north-western coast, on the contrary, you see is broken up by a number of deep bays and gulfs, forming good harbours. On the eastern coast there is a line of lagoons extending for about 280 miles. These lagoons are very varied in breadth, sometimes appearing like a straight river or a very broad canal, and at other points widening out into extensive lakes several miles long. The narrow belt of land between the lagoons and the sea is like a piece of park or shrubbery with luxuriant tropical vegetation and green sward, with tall firs, coco-nut palms, pandanus, and magnificent white orchid flowers. Travelling along in the old-fashioned style of palanquin with bearers, as in pre-conquest times, one caught frequent glimpses of the lake-like lagoons on the one hand, and of the wide expanse and constant roar of the waves of the Indian Ocean on the other, so that I have a delightful recollection of many journeys along this tract of land between the lagoons and the sea. The journey to the interior as one turned westward was a much more difficult and fatiguing one. There was no road, only a narrow footpath, through the dense forest; up and down long slopes slippery with mud, through marshes, and over rocks, and fording streams and rivers. But now the journey, which took me nine or ten days in 1863, is accomplished by railway to-day in about as many hours, for we leave Tamatave in the morning, and reach Antanânarivo* in the evening.

I can only add one more striking feature of Madagascar, and that is, the purity and clearness of the air. We have no great smoky towns, and nothing like our English fogs, so that mountain tops, thirty and even forty miles distant, stand out clear and sharp against the blue sky in a wonderfully distinct way. You will not wonder, therefore, that those who have lived long in the country desire to go and live there again, especially if they are missionaries; for they cannot help loving the people, and desiring to do all they can to help them.

* *The capital is now called Tananarive, the French form of its earlier name.*

NATURE'S DISGUISES

HOW INSECTS HIDE FROM THEIR ENEMIES

I DARE say that you have often read in fairy tales about certain things which were believed to render their owners invisible, so that they could go anywhere and could see people, and yet not be seen by anyone themselves. Of course these stories are fables; yet there are many facts in natural history which are quite as wonderful as any fairy tales, and I want in this paper to describe some of those which I have often seen in Madagascar.

Let us suppose we are taking a walk in the outskirts of the great forest, and as we stroll along the narrow path among the trees and bushes, a large insect flies past us with bright scarlet wings; we follow it quickly, and with a butterfly-net try to capture it as a specimen. Yet, although we saw exactly where it settled, lo and behold, it has disappeared, and there are only green leaves to be seen. But after careful inspection of the spot, we see at last that there *is* an insect there, a species of mantis, but its wing-cases and legs are so like green leaves that it is difficult to detect its presence, for its bright scarlet wings are quite folded up and hidden under its wing-cases as it rests on the bush.



Photo]

[Ward.

Mantis—carnivorous insects resembling leaves.

Four of them are shown, the lowest one with its wings expanded.

As we walk over the open moory hills in the interior of the great island during the warmer months of the year, every step we take through the grass arouses a score or two of grasshoppers and other insects, which fly up as we pass along. Here, among many others, is a grasshopper which resembles in all its parts dry grass, just like that which covers the ground towards the end of the dry season. Its legs are quite like grass stalks; its wings exactly resemble blades of dry grass; its little antennæ

or feelers are like minute tufts ; and its eyes are as like little brown seeds as it is possible to imagine. It must be difficult indeed for any bird to see such an insect, its resemblance to dry grass is so perfect.

But here again, leaping up from the moor, is another grasshopper, and all its parts are just as much like *green* grass as the other one was like *dry* grass. Legs and wings, head, body and feelers, are all bright green, and when it settles on a bush, it is hard indeed to see which is insect and which is leaf. You will agree with me, I am sure, that both brown and green grasshoppers have " protective resemblances."

Other insects also have various means of protecting themselves. Butterflies, for instance, you have noticed, almost always have the under side of their wings of duller colours than those on the upper side. And you will have seen that when the butterfly is at rest, the wings are very often closed together, so as to be almost invisible when seen from above ; while, if looked at sideways, only dull grey or brown tints and dots or eyes are to be seen. We have many examples of butterflies with such habits and colours in Madagascar ; and in some cases the under sides of the wings are so much like brown or withered leaves that it is very difficult to detect them as they settle on a branch among the bushes.

In Madagascar, as in many tropical countries, there are several kinds of what are called " stick-insects." In these most curious creatures the bodies and legs and feelers are all exactly like dry sticks, and the wings are hardly visible. Unless these

insects move it is almost impossible to discover them, they are so wonderfully like dry twigs or sticks. They vary in length from an inch or so up to ten or twelve inches long.

Several species of spider also change their colours, so as to be exactly like the place they live in or upon, and thus escape observation both from their enemies and their prey. There is a small kind, which takes up its home inside the large white flowers of a species of lily. And in these, if you look closely, you will see a small spider, which is also perfectly white, so that it may lurk



Photo]

[Ward.

Stick Insects.

There are four insects in the picture.

in the flower and be almost unseen, as it waits for an unwary fly or bee, which may be probing for honey among its stamens. I was one day noticing the habits of a peculiar species of ant which lives under the bark of certain trees, and happened to take hold of a rough piece, as I thought, of the bark, when it came loose and dropped to the ground. Presently, the little brown lump developed four pairs of legs and scuttled off to a hiding-place, showing it to be a species of spider, which thus mimicked the bark of a tree, so as to hide completely its real character. There is another kind of spider which resembles a curious shell as it rests on the branch of a tree.

Some few years ago we were staying for our Christmas holidays at the Sanatorium near the upper belt of forest, and as I sat one day at an open window writing a Natural History for Malagasy readers, some native boys came up and pushed through the window a piece of stick broken off from a tree. Like almost every part of trees in these forests, this was thickly covered with tiny mosses and lichens, green and white, brown and grey, in colour. I looked at this stick, and saw nothing peculiar about it, and so I asked what they had brought it to me for. "Look at it," they said. So I looked again, and could see nothing but a piece of stick. Still they said, "Look at it," and so, bringing the end of the stick close to me, I detected a slight movement, and then I saw that there was a tree-lizard, about six inches long, clinging to the wood. But the scales of the brown body of this little creature were so mottled with colours exactly resembling the mosses and lichens on the stick that it was almost impossible to detect it unless it moved. I never saw anything so remarkable in "protective resemblance."

This power of changing colour, you see, is not confined to insects, for those of you who read the first chapter on "The Chameleon" in this book will remember what I told you about it. Many fishes have also this power, and their colours rapidly alter according to the water they swim in, whether clear or muddy, or the river bottom they swim over, whether mud or sand. Most of the animals that live in dry, sandy deserts are pale brown in colour; the lion, for instance, and many species of antelope, and also the giraffe and others, so that they are not easily seen in their usual surroundings. Sportsmen say, too, that even the stripes, black and pale brown, of the tiger make it difficult to detect that savage creature among the bright lights and deep shadows of an Indian jungle.

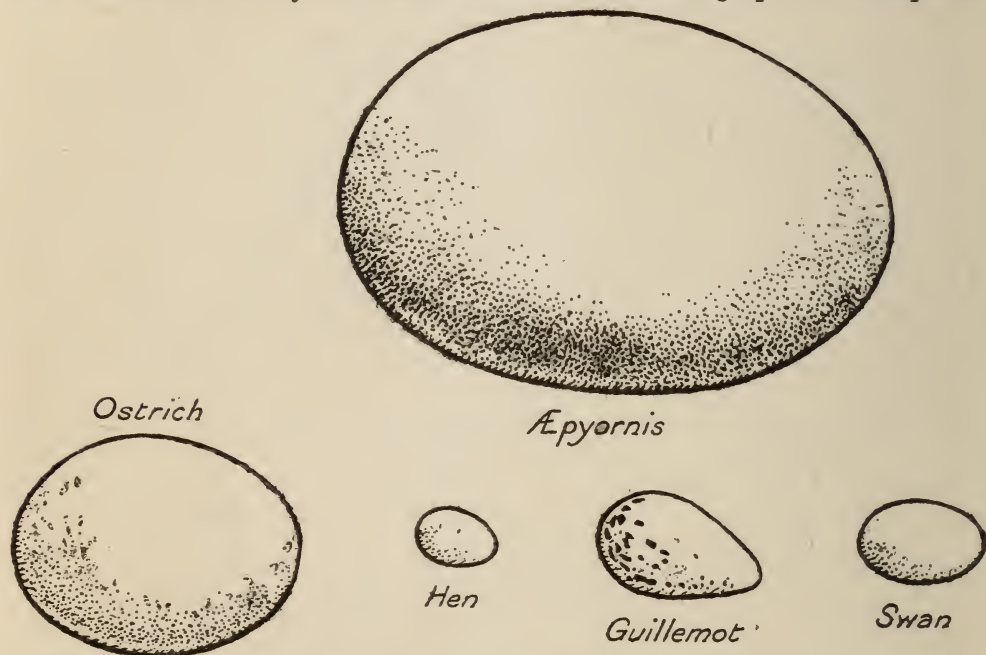
We have in Madagascar striking examples of quite an opposite kind of thing to "protective resemblances," namely, insects so brightly coloured that they are very conspicuous, they cannot but be seen. There is a large species of locust, which has green, yellow, blue and red tints, and scarlet wings. But it has a vile smell and probably a nauseous taste, so it seems to say, "Hands off; don't touch me, or you will repent it," and therefore its bright colours are called "warning colours," and it fears no enemy.

VANISHED CREATURES

THE GIGANTIC EXTINCT BIRDS

I WANT to tell you something about creatures that no longer live in the island of Madagascar, or anywhere else, but who lived there many thousand years ago, and some of them probably millions of years ago in the dim past ages of the world.

It is only within the past fifty years or so that these extinct creatures have become known, by their bones, which have been dug up in various places.



The sizes of some eggs compared

In the case of some of the birds who lived in Madagascar in ancient times, their eggs were first found, or portions of them.

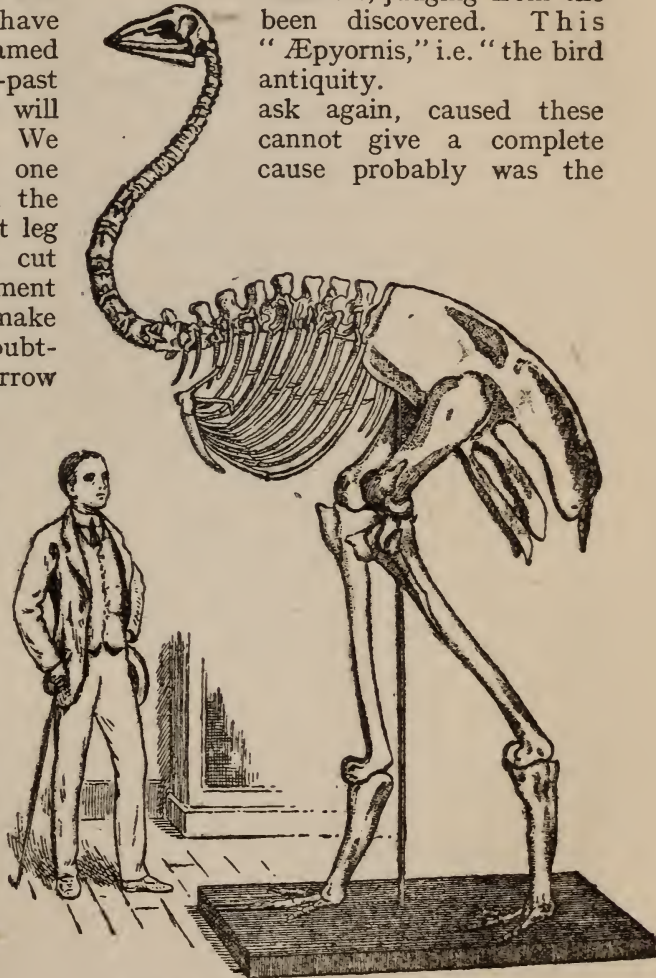
You have seen ostrich eggs and know how large they are ; but these eggs are far larger, more than six times the size of ostrich eggs, for they are more than fourteen inches long ; and if we take a number of hens' eggs and break them into the shell of one of these big eggs, it would take 160 of them to fill it. What a pity we cannot get such an egg for breakfast nowadays ! Hard boiled, it might be carved into a sufficient meal for a very large family !

But what sort of a bird was it, you will say, which produced such an enormous egg? Its bones show it to have been a bird that had no wings at all, not even the rudiments of them, but had very massive and powerful leg bones, by which no doubt, it could run at a great speed over the plains and downs of Madagascar.

It was, however, nearly twice as tall as the ostrich, for it measured about ten feet in height, the tallest of all known birds, either living or extinct. It must have existed in considerable numbers, judging from the quantity of its bones that have been discovered. This "Æpyornis," i.e. "the bird antiquity.

And what, perhaps, you will ask again, caused these great birds to disappear? We cannot give a complete answer to this question, but one cause probably was the appearance of mankind upon the scene. For many of the great leg bones seem to have been cut across with a sharp instrument such as no wild animal could make or use, and these cuts were doubtless made to extract the marrow after the flesh had been cooked. There appear to have been several species of these big birds, some of them only as large as an ostrich, while the smallest was no taller than a bustard.

Other ancient creatures formerly inhabiting Madagascar were several species of lemur. You may, perhaps, know that that island is now the head-quarters and chief home of the lemur, animals chiefly inhabiting the tall trees of the forests, in which they make nests, seldom coming to the ground except to drink, and leaping from tree to tree at a tremendous speed.



The skeleton of the Æpyornis.

Recent researches in Madagascar show that the lemurs now living in the island are much smaller than those formerly inhabiting it, for the bones of many extinct kinds have been dug up, which were from four to five times the size of the largest existing lemurs. Some of these must have been formidable-looking creatures, more like a gorilla than any animal now living in Madagascar ; while others, by the form of their heads, appear to have largely or frequently lived in the waters of the lakes and streams.

The remains of many other now extinct animals have been discovered, together with those of the gigantic birds and lemurs just described. Among these were great tortoises, whose horny shells were about six feet long by as many broad. These are now no longer found in Madagascar, but they still exist on a coral island called Aldabra, which is about 300 miles N.W. from Madagascar.

They were no doubt found to be so good to eat, that the earliest men coming to the great island gradually killed them off.

Another ancient inhabitant of Madagascar was a small species of hippopotamus, which formerly wallowed in the rivers and swamps of the interior, just as the larger kinds still do by scores together in the African lakes and rivers. Here again, that great destroyer, man, probably helped to exterminate the slow-moving and somewhat helpless beasts.

There were also then living great species of rails and also of geese, for most former animals seem to have been much larger than their descendants are now ; crowds of river-hogs swam the streams and dug up roots among the woods, and herds of slender-legged zebu-oxen grazed on the open downs.

These were the numerous animals, far more in variety as well as in numbers than there are at present existing in the island, and which were hunted by the first wild men with their palm-bark spears, and were shot at with arrows tipped with burnt clay or stone. These early inhabitants of Madagascar did not know the use of iron ; iron and iron working were introduced by the Malayan ancestors of the present Malagasy people at a comparatively recent date.

What a different island it was then to what we can travel about in now ! Far earlier than any of the creatures just described, great long-snouted crocodiles might have been seen in the lakes and lagoons ; huge sloths moved slowly along the branches of the trees, and immense land-lizards, from sixty to eighty feet long, crawled over the wooded plains, tearing down whole trees with their powerful arms and claws. They must have been fearful monsters to meet with on a morning's walk !

SOME QUEER SPIDERS

CATCHING BIRDS IN COBWEBS

MOST boys and girls, I fancy, think that spiders are unpleasant creatures to have to do with ; and certainly the webs they make about odd corners of our houses, catching the dust and dirt, are not very attractive, nor are the makers of them, here in England at least, much more agreeable in appearance. But in tropical countries spiders are often very beautifully coloured, and they are, without doubt, well worth studying for their curious habits and the great variety of ways in which they obtain their food.



Epeira Coquerellii.

A large proportion of all known spiders spin webs or nets, while many other kinds obtain their prey by hunting it on foot. But all spiders appear to have the power of producing fine threads of silk, with which they make their homes, and line the tunnels made by certain species, and spin nets or gauzy sheets of fine material by which they catch various insects.

All over the interior of Madagascar a large species of spider is seen in great numbers, and cannot escape observation by any one. It is about an inch and a half long, but its legs spread over six or seven inches.

It is handsomely marked with red and black and golden colour, and

may be seen by scores sitting in the centre of its great geometric net which it spreads between the branches of neighbouring trees, especially in the mango orchards. From the considerable distances spanned by the main guys and supports of its net, this spider is called by the Malagasy, *Mampita-hady*, or "fosse-crosser," and spaces of twenty feet or more are crossed by its lines. How does it get across such a great distance ? you will say.

Probably it darts out threads which are carried by the wind over the open space. I remember one afternoon seeing a deep valley, about a quarter of a mile broad, in which the air seemed filled with floating spiders' lines, made visible by the sun shining on them. The main cords of these webs are

strong enough to entangle small birds, for a cardinal-bird and a kingfisher have been found caught by them.

Probably some of you know that the thread which spiders make is used here in England and in other countries for marking the exact centre of the lenses fixed in telescopes, especially the large ones employed by astronomers, because these spider lines are much finer than any thread that can be made in a cotton or silk mill.

In Madagascar, however, as well, of course, as in other tropical countries, many spiders are larger than those living in England, and they make silken threads which are very stout and strong. In passing along the forest paths I have often felt how strong and difficult to break these spider's lines are, especially those which are stretched across from branch to branch of the trees, and which form the framework, so to speak, the guys and principal lines on which the web or net is fixed.

These threads being so strong and being a kind of true silk, it has occurred to many people to try and use them for making silken fabrics, and in Madagascar the French have succeeded in obtaining from this spider, silk which has been woven into silk cloth. This is of a golden-yellow colour, and makes a good-looking article.

But I must add that it is not at all likely that silk from spiders will take the place of that which is obtained from the chrysalis of the silkworm moth. These insects are much more easily reared and are more reliable; for spiders are uncertain in temper and are more difficult to handle and to manage than the dead cocoons of the moth.

Another species of spider, which has a satiny dark-grey abdomen as large as a big nut, spins no net, but makes an inverted cup-shaped house of strong web in which she hides herself. She is no doubt a huntress, and catches any unwary insect which approaches too near her castle. Here is another kind which, when settled in the middle of its web, draws up its legs so as to resemble a small lump of earth or a stone. This is doubtless an instance of what we talked about in a previous chapter, namely, "protective resemblance."

As we look about in the bushes for wild flowers and fruit, we come across a geometric web, and in the centre is a spider (*Gasteracantha*), which is a good deal broader than it is long, and is armed with strong spines

Here, in our houses in Antananarivo, is a rather large kind of spider, light brown in colour, but its peculiarity is that it is extremely thin and flat



Gasteracantha madagas^{ensis}



Gasteracantha formosa



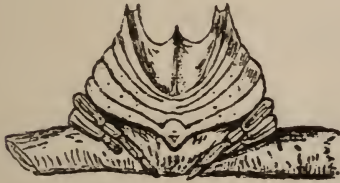
Thomisus foka

—a case almost of extension without thickness, as it is hardly thicker than a piece of stout paper, so it is enabled to wait for its prey hidden in narrow and almost imperceptible cracks.

It is a hunting spider, and apparently makes no nest or web, and it is amusing to see the adroit way in which it will cautiously approach the edge of a crack in a board and sweep off an unwary fly.

There is another curious spider, which has a very small body, hardly larger than a big pin's head, but it has extraordinary long thread-like legs, covering a very wide area when compared with its minute body.

You have no doubt heard of spiders which live in holes in the ground which are closed at the top by a small door. We have one or more kinds of these "trap-door spiders" in Madagascar; these clever little creatures line their tubes with a silky web, and at the top is a round door, about as large as a sixpence, with a hinge of silk like a strong spring, so that it shuts of itself when its owner goes out or in.



Epeira mitralis
back

The outside of the door is covered with roughish clay, so that it is impossible to see it when closed, so exactly does it resemble the ground around it.

Several species of Madagascar spiders bite very dangerously and are greatly dreaded by the Malagasy, as they say that fatal consequences often follow a bite. One of these is like a shining black marble, but with a small red spot on its abdomen; and I remember that when one of my bearers brought a specimen for me to examine, he carefully got it on the end of a long stick and kept as far from it as possible!



side



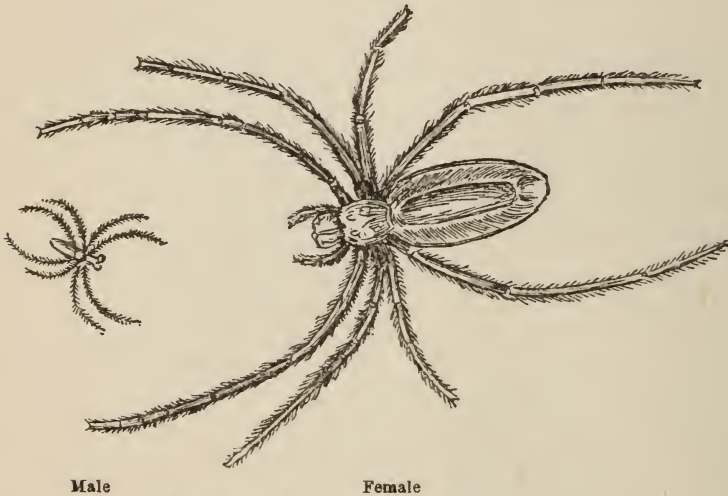
front

Then you see pictures here of two other spiders which have sharp thorns all round them, a very unpleasant morsel they would surely be for any bird or animal attempting to swallow them. They are appropriately called *Gasteracantha*, i.e. "thorn-stomached." The third one (*Thomisus*) is said to be very venomous, even causing death if remedies are not quickly applied.

Another kind is more like a minute crab than a spider, with unpleasant-looking crab-like claws. Its bite is followed by swelling, which spreads from the wounded part throughout the whole body.

I have spoken of the strange shapes which some of the Madagascar spiders possess; but the illustrations given herewith will give a better idea than any

mere description of them can do. The largest figure shows an *Epeira* of extraordinary shape ; it will be seen that the abdomen is like a set of three cones fixed into one another, and terminated by a sharp point. A still queerer appearance is presented by another species, as it crouches, fixed close to a branch or twig ; whether viewed from the back or front or side, it is equally "uncanny" in its looks (see figure of *Epeira mitralis*) ; in fact, until it moves, it would not be taken for a spider at all, for it is more like some curiously marked shell.



Nephila Madagascariensis

Many curious facts I could also tell you about other spiders in the great island ; how, for instance, on a cold morning in the dry season, one sees thousands upon thousands of little webs scattered over the bare moory downs of the interior ; some of these are beautiful little geometric nets, but the larger number are a fine gauzy web, from six inches to a foot in diameter, spread horizontally over the grass stalks. In the centre of each is a funnel-shaped tube, and if you look down this tube you will see a little brown spider, waiting for any insect that may come her way. But the curious thing is, that it is only during early morning, while the dew is fresh, that you can see these nets and webs ; as soon as the sun gains power, and the dew is dried up, they are all invisible ! They are there all the time, it is only the dew that makes them seen.

THE TRAVELLER'S TREE

HOUSE, TABLECLOTH AND WATER FROM ONE TREE

AS we have already noticed, the central parts of Madagascar are surrounded by an almost continuous belt of forest, thinner and more scattered on the west side, but broader and denser on the eastern side of the island. For several hundred miles this forest is divided into two belts of wood, with a few miles of bare plain between them ; so that if we go up to the interior from the east coast, we must pass through thick forest, which in one part is forty miles across, but is generally about half that distance.



Sparring the Traveller's Tree for Water

What a wonderful place this forest region is ! There is a crowd of trees with tall trunks, all soaring aloft to get up to the light and heat of the sun. Every tree-trunk is the home of a crowd of smaller plants—ferns and mosses, orchids and climbing palms, and creepers of all kinds, so that sometimes you cannot tell which are the leaves of the tree, and which are those of the plants which use it to clamber up into the sunlight.

Besides this, the trees are all connected together with *lianas* or climbing plants, which are sometimes hundreds of feet long, some of them as thick and strong as a ship's cable, down to smaller ropes and cords, until you find fine lines like thread, but strong as iron wire. These ropes and cords cross and twist and twine in all directions in utter confusion, sometimes like great serpents ascending the loftiest trees, so that often when a tree is cut down at the base, it cannot fall, because these rope-like plants still hold it up among its neighbours.

It would require a large book to describe fully only a few of these Madagascar forest trees and plants, as well as their properties and various uses ; but I want here to tell you about one which is called " The Traveller's Tree." This is found all along the coast region and up to about 2,000 feet above the sea, where it becomes too cold for it, for it is a tropical tree and loves the warmth.

On the coast it grows together with many other kinds, but a few miles inland it is the chief thing growing there, and it covers the hills and valleys in countless numbers. The accompanying picture will give you a clearer idea of the Traveller's Tree than I can describe in words, and you will see that on the top of a moderately tall trunk, there is a great semi-circular group of long and broad green leaves, some twenty to thirty in number, and arranged, not as in almost every other tree, *round* the trunk, but in one plane, and in the form of a gigantic fan.

These leaves grow up from the centre with very long leaf-stalks, and the outermost ones on either side gradually wither and hang down. Between the leaf-stalks, near the base, shoot out three or four clusters of the fruits, in sheaths not unlike short and stout bullock's horns ; and if you can get hold of one of the fruit-pods, you will see that in each of these there are six rows of seeds like beans, and that each seed is wrapped up in what looks exactly like a piece of blue silk.

But why, you will say, is it called " The Traveller's Tree " ? Because if you take a spear or a sharp-pointed stick and pierce the base of the leaf-stalks, where they all grow wrapped round each other at the top of the trunk, a stream of pure cool water gushes out. I know this to be a fact, for some years ago I took a long journey into the south-eastern parts of Madagascar, and one day we were hot and thirsty, and could see no water but the stagnant and brackish water of the lagoon. So I said to my companion, " Let us try the Traveller's Tree."

We called one of our bearers to bring his spear, and one of us pushed it in the base of the leaf-stalks, while the other held up a tin ladle; and sure enough we immediately had more than we could drink of cool refreshing water.

On examining a section of one of the stalks, a hollow channel about half an inch in diameter is seen running down the inner side of it; the large cool surface of the leaf appears to collect the water condensed from the air, and this is conducted by the little channel down to the base of the stalk. The leaf-stalks are also all full of cells filled with water, hence the plentiful supply of it.

We afterwards found in a village not far away that small water-pots were placed in a hollow cut in the base of the leaves of this tree, so as to collect water for drinking and for household use.

But although the *Traveller's Tree* is its name, this beautiful tree might almost as appropriately be called "The *Builder's Tree*," for it supplies almost all the materials the coast tribes need for making their houses.

These are made of a strong framework of light poles, and the bark of the tree is stripped off, pressed flat, and thus forms a firm flooring. A number of the leaf-stalks, which are from 7 to 10 feet long, are placed together and fastened with a fine cane or a strip of bamboo, so as to form large sheets of light material, and these fill up the spaces between the upright poles and so make the walling of the house. And they are also used as mattresses. Then the leaves make an excellent thatch for the roofs, and keep out securely the sun and rain; so that all parts of the tree are of service. Besides this, the fresh green leaves serve as dishes for rice and other food, and also are used as a table-cloth as well; and these need not be washed, but are thrown away and fresh ones taken instead, for there is an unlimited supply of them.

In former times, before the French conquest, when we were invited to the New Year's festival at the palace, the rice was always served on pieces of Traveller's Tree leaf; while for spoons, a piece of leaf neatly tied up with a fine tendril of some climbing plant, was provided for each guest. The idea of all this was, I suppose, to keep in memory primitive times, when] the ancestors of the Hova people were very simple in their habits, just as the forest tribes of coast-dwelling Malagasy still are.

So you see that, besides being beautiful to look at, the Traveller's Tree is most useful to the different peoples living on the coasts of Madagascar.

THE LACE-LEAF PLANT

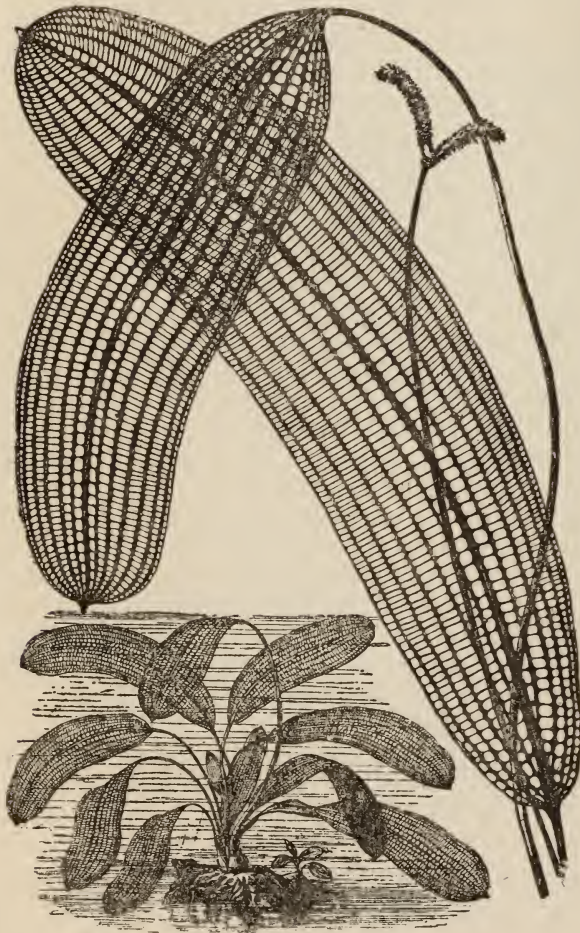
A LIVING SKELETON

IN the last chapter I told you about a remarkable tree we have growing in Madagascar, the Traveller's or Builder's Tree, and now I want to say something about a plant which grows in the water.

In the rivers and streams of Madagascar you may frequently see a flower divided into two little tufts, pinkish white in colour, and rising an inch or two above the surface of the water.

This is the top end of a long stalk which goes down into the mud, and is the flower of what is called the "Lace-leaf Plant." And if you will wade into the stream, you can easily pull up the whole plant, with perhaps a dozen of the leaves, which are about a foot long and a couple of inches or more broad. These leaves are worthy of notice, for they are very like those you may see in herbariums labelled "skeleton leaves," from which all the green skin of the leaf has been removed, leaving only the veining or framework.

Take a leaf and lay it upon a piece of paper, and you will see that it is really very like a piece of lace, there being no skin, but only the framework of the leaf, like a fine netting. The accompanying illustration



The Lace-Leaf Plant of Madagascar

will show you this quite clearly, and you will agree that it is rightly called the "Lace-leaf Plant." The veining is somewhat like that of a lily leaf, the longitudinal fibres running through the whole length and crossed at regular intervals by the transverse veins, which are like fine thread.

The specific name, *fenestralis*, i.e. "windowed," conveys this idea of a regular arrangement of structure, like a glass window with very small panes.

Each plant has ten or a dozen leaves branching from the root, which resembles a small potato, and can be eaten, for it is a species of yam, a very useful kind of root which grows in most tropical countries and is a valuable food. The plant grows in running water and thrives best in warm situations. Few objects can be imagined more beautiful for a small aquarium than the Lace-leaf Plant, which Sir W. J. Hooker termed "one of the most curious of Nature's vegetable productions."

The leaves in their various stages of growth pass through different shades of colour, from pale yellow to dark olive-green. The Rev. William Ellis, the well-known missionary to Madagascar, was the first to bring specimens of this interesting plant to England, and from those he brought other plants have grown, and are now to be seen in the gardens at Kew and Chiswick, and in the Crystal Palace and other places. The next time you go to Kew, be sure and look out for the Lace-leaf Plant.

While speaking of the lace-leaf plant, I cannot but remember lace itself, which for many years past has been made in considerable quantities in Madagascar, and provides a pleasant employment for a great number of Malagasy women and girls. This beautiful handicraft is one of the many arts of civilised life which the Malagasy owe to English missionaries. This lace is made both in silk and in thread, and resembles that made in Honiton and also in Malta, and is much admired by all lovers of beautiful lace. It is made to form handkerchief borders, collars of all kinds, fichus, cuffs, and for the trimming of ladies' dresses, and a good deal is purchased to send to Europe. But the Malagasy women are not content to copy designs derived from European models only, for many of their husbands and brothers design fresh patterns for them, and native flowers and leaves, butterflies, birds, and even portraits of famous people, may be seen in some of the lace which they produce. In the girls' high schools lace-making forms a part of the instruction given to the scholars; and it appears to be an employment well fitted for the clever fingers of native women and girls in Madagascar. The introduction of this beautiful art in Imèrina was due to Mrs. Wills, who was the first to teach it to Malagasy women; and Mrs. A. S. Hockett did the same in Bètsiléo.

THE ROFIA PALM

THE WEAVER'S STOREHOUSE

IN all the warmer parts of Madagascar, that is, from sea-level up to about 2,000 feet above the sea, one finds growing thousands of a species of palm called *Rofia*. From the picture given herewith you can see clearly that it has a moderately high trunk, all rough and rugged from the remains of the old leaf-stalks, which die off as the tree grows upwards. And you will notice that the leaves are very few, but enormously long, indeed they are from twenty to thirty feet in length, and that they rise up and bend over in a very graceful fashion, like immense plumes of feathers.

When travelling from the east coast of Madagascar to the interior highland, one comes, after two or three days' journey (that is, in the old style of travelling by palanquin) to a belt of country where this palm is the most abundant tree, growing in large groves. It loves the damp and swampy places, and I remember one spot where, until the French conquest, the main



A group of Rofia palms

road to the capital was through a swamp, with a foot or more of water, and where all around you were scores and scores of the tall trunks of the Rofia palm ; a very pretty scene it was, indeed it was like the interior of some great temple, with hundreds of columns, reflected in the water, and with the bright sunshine glancing through the leaves.

The leaf-stalks at and some way from the base are from four to five inches in diameter, and are very light but very tough and strong. They are employed for many purposes by the Malagasy, for of them they make the long poles of ladders ; they are used for the poles of ladies' palanquins, and also for the rafters of house roofs, etc. There is a fine specimen of this plant in the Palm House at Kew Gardens.

But perhaps the most useful parts of the Rofia palm are the fine pinnate leaves, which grow by hundreds on each side of the long leaf-stalks or midrib of the leaf. These are from two to three feet long, and are from an inch to an inch and a half wide.

From the inner fibre of these leaves, while they are still young, the people prepare a material which they weave into a variety of cloths, both coarse and fine.

The fibre is divided by a kind of comb into different widths, according to the fineness or otherwise of the material to be made, and is of a beautiful straw colour ; but the Malagasy also dye the fibre with a variety of tints made from indigo, turmeric, and various earths and ochres.

Some of the cloths they weave are very fine and are sometimes mixed with silk or cotton, so as to be suitable for the finest ladies' dresses ; while others are very coarse, and are used for sugar bags and sacking. In former times, when we used to be carried in light palanquins, our bearers had a light sleeveless jacket of this coarse rofia cloth, and it is also largely used for covering mattresses.

Great clusters of seeds, which are enclosed in a shiny brown skin, hang down from the top of the trunk of the Rofia palm. These are really very pretty little objects, and are used as boxes to hold small articles, such as rings and brooches and other jewellery.

The Malagasy women of the interior and the eastern provinces are very clever in spinning and weaving, and they make handsome cloths of silk, cotton, hemp, and several other vegetable fibres, yet they do all this with the simplest and rudest kind of looms and spindles, and all, of course, are hand-made.

In some parts of the island they call a girl *zàza ampèla*, i.e. " the spindle child," because all girls are taught to handle the spindle and loom. This reminds us of the old English word " spinster," which tells us of former times when here in England women used to spin linen thread for household use.

The rofia fibre is very strong, and is the common substitute for string in Madagascar ; it is also imported into this country, and is much used by gardeners for tying up plants.

RICE

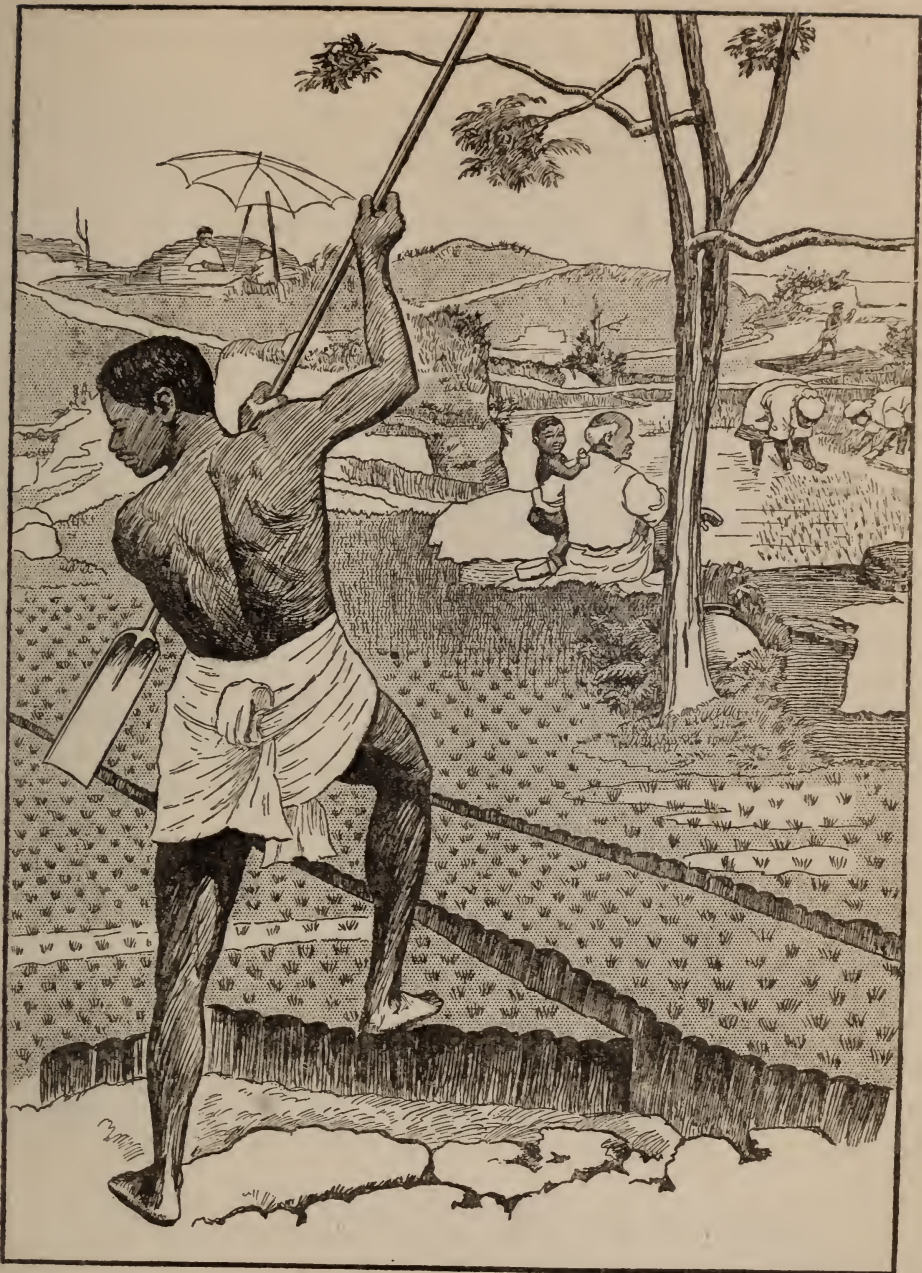
THE MALAGASY "STAFF OF LIFE"

SOME months before the end of the Great War there were placards to be seen everywhere with the words: "*Eat less Bread.*" It would be of little use to put up such notices in Madagascar, because the great majority of the people there do not eat bread at all, for their staple food is rice. So while the Malagasy have not much interest in some of the trees and plants I have told you about in these pages—the Lace-leaf Plant, for instance—they all have the greatest interest in the plant from which they get their chief food, rice, or, as they call it, *vàry*; and a large part of their time and labour and conversation is devoted to rice and its cultivation.

Boiled rice then is the chief article of their daily meals, that is, of the two which the poorer classes take, namely, an early dinner in the forenoon and a supper about sunset, which is not much before or after six o'clock in the evening all the year round. You would think this was rather monotonous fare, but it is not so to them, any more than bread-and-butter is to ourselves; and, of course, they always have something else as an accompaniment or relish to the rice—different kinds of greens or vegetables, sometimes small shrimps, or dried locusts, or a small quantity of pork or stewed meat and gravy—but rice is the chief item.

In the central provinces of Imèrina and Bétsiléo almost all the rice produced has two stages in its growth, and is not reaped where it has been sown, as our wheat and barley is; for at the sides of the rivers and streams, as well as at the edges of the larger rice-fields, and up the valleys, are small strips of ground where the seed rice is sown broadcast, and in these it grows like thick grass until it is from six to eight inches high. These smaller rice-patches are called the *kètsa* grounds, and are of a brilliant green colour. The rice is then pulled up, plant by plant, tied in small bundles, and is planted out in the larger rice-fields in the broad valleys and plains. It must be remembered that rice is grown *under water*, from being sown to being reaped, so that every rice-field or rice-plot, large or small, must be perfectly level; and as the innumerable valleys rising steeply up between the hills are also employed, these are terraced from the lowest to the highest points to which water can be brought, and are divided, one stage from another, above or below, by low banks of earth.

Before, however, the larger rice-fields can be planted, a good deal of work has to be done in them. First, they have to be dug over with the long heavy-handed spade used by the Malagasy, two men often working together as they turn up the large clods as well as the stubble from the last year's crop. A



From a Malagasy Drawing

At work in the Rice Field

A Malagasy is digging the dry stubble field with the long handled spade. The old grandfather is sitting on the bank encouraging the women who are transplanting the young rice plants into soft mud and water. Above, to the right, is a man on a bamboo raft in the river; under the umbrella at the left, is a roadside seller of food.

considerable quantity of these clods is piled up in lines, so as to expose them for some time to the sun and air. Then water is conveyed by small channels from the upper part of the valleys near by, until the earth is fairly soft. After this, a number of cattle are brought to the rice-field and are driven backwards and forwards by men and boys, with much shouting and chivvying them over the field, so as to trample the soil into soft mud, the poor beasts being generally splashed up to the eyes during the process. The whole is then worked over by the spade, so as to be fairly level. Now comes the women's and girls' share in the work. A number of them, in their worst and coarsest dresses, take the bundles of *ketsa* or rice plants in one hand, and with the other they rapidly stick each plant into the soft mud, leaving a space round each for the different stalks which will spring from it, they themselves standing more than ankle-deep in the mud and water. It must be very fatiguing and back-aching work in the hot sun, yet this is the way in which the greatest part of the rice grown in the central provinces of Madagascar is produced year after year.

From this "wet culture" of rice there comes a Malagasy saying about things that are inseparable, that "they are like rice and water." For the seed rice is soaked in water before being sown; it is sown in water; it grows there in water; it is transplanted in water; it ripens until it is reaped, still in water; it is carried in small canoes along little streams and channels of water to the threshing-floor; it is boiled in water, and the water in which it has been cooked, and a portion left, slightly burned, is made into a kind of coffee to be drunk after the evening meal; and so it is "rice and water" from beginning to end.

From the summit of the long and lofty ridge of rock, two miles in length from north to south, on which the capital of Madagascar is built, one sees a very extensive rice-plain from the south-east to the north-west, stretching away for miles in some directions. It is a beautiful sight to see this great expanse of bright-green rice soon after planting, for it is like a vast meadow, or a green lake, from which the low red clay hills on which the villages are mostly built rise like islands out of the water. This great rice-plain was no doubt a lake in ancient times, and then an immense marsh, which has been gradually reclaimed and brought under culture, as the population has increased. And perhaps the view from the capital is equally beautiful at harvest time, when the rice has turned a golden tint, much like an English cornfield.

The Malagasy are very skilful in bringing little streams of water, often from a considerable distance, to supply the necessary moisture for rice cultivation. These are led round the sides of hills and banked up to keep the valuable liquid from waste on the road. But while the Hova are clever enough in this way, one must go to the Bétsiléo province to see the most

skilful methods of rice culture, for there they have an elaborate system far surpassing what can be seen in Imèrina. Not only are the valleys and hollows between the hills terraced—the *concave* portions of the low hills and lower slopes of the high hills—but the *convex* portions are also stepped and terraced up like an immense staircase for a great height, the narrow lines of rice-plot running round them in concentric circles. These terraces are often from forty to sixty in number, and I remember at one place they were even as many as *ninety* green steps up the valley.

When taken from the rice-pit in their house-yards, or from the huge basket made from a great straw mat and stored in their houses, rice must, of course, be husked and the hard outer skin removed. For our wheat and barley, this is done in mills of some kind—wind, or water, or steam mills—but the Malagasy pound their rice in a large wooden mortar with wooden pestles, two or three women or girls working together. It is then placed in a large flat wooden dish, and the contents are tossed up in the air, so that the wind may drive away the chaff. And if you stay the night in a village in the country you cannot help hearing in the morning and the evening the “thump, thump” of rice-pounding in the house-yards all around. This Malagasy custom reminds us of a verse in the first Psalm, in which the ungodly are said to be “like the chaff which the wind driveth away.” And here I may say that numerous passages in the Bible are clearer to the Malagasy than they are to us English people, for many of their habits and customs are much more like those of the people mentioned in the Bible than are our own customs and surroundings. So it is also in sowing rice; for, as I have watched a sower casting the rice, literally, “on the water” of the *ketsa* grounds, I have recalled the words: “Cast thy bread upon the waters, for thou shalt find it after many days” (Eccles. xi. 1).

From what I have here told you, you will not be surprised that the time and thought and talk of the Malagasy people is much occupied with rice and rice cultivation. They think no meal complete without a great heaped-up plate of rice, and sometimes, when we have invited a few of our native friends to a meal prepared in English fashion and have given them what we usually eat ourselves, they will ask: “*Aiza ny vary?*” “Where is the rice?” For, as I have already said, rice is their “staff of life,” and is the foundation and the chief constituent of every meal.

ANTS AND BEES

ANTS EAT SERPENTS AND MOTHS RAID HIVES

IN adagascar, the Ants are everywhere, especially in the woods. As we travel through the two great forest belts, we cannot help noticing, high up in many of the trees, a large dark-looking ball, which is not a bird's nest ; and if you ask a Malagasy what this is, he will reply, *tranom-batsika*, that is, an "ants' house." And if one of these is procured—not an easy matter, for the little inhabitants rush out and attack the intruder, and dig their jaws into one's flesh in a way to make one jump—it will be seen on opening the nest vertically, that there are a number of thin floors about half an inch apart and supported by pillars. These are all made, as is also the outside, of cowdung, or of earthy and vegetable matter, forming a coarse papery substance, and the whole is as large as a football.

The ants run about frantically, their chief care being to carry the white eggs and pupæ to a place of safety, if they can find one. And it will be observed that besides the hundreds—in fact, thousands—of black ants, there are to be seen a number of very small but handsome beetles (about one-eighth of an inch long), perhaps in the proportion of about one to a hundred of the ants.

What purpose do these entirely different insects serve in the home-life of the ants? They must of course be of some use, but no one seems to be able to throw any light on this point.

Besides these large and conspicuous nests, containing probably thousands of ants, other nests of all sizes from about that of a nut to an orange and upwards may be seen. These are the hamlets, villages and small towns of the ant-world, while the large nests are the great cities of their commonwealth.

It is difficult to see what these little creatures, so numerous and active, can live upon, so high up in the trees, for they can hardly descend for food every day fifty or sixty feet to the ground.

A very different kind of ants' nest is seen in the more open and sunny forest paths, and also in the bare interior country. These have the form of a low circular mound, from eighteen inches or more in diameter, and perhaps eight to ten inches high, with a large opening at the top—a miniature crater.

This mound consists of fine grains of earth and sand brought up and thrown out by the little workers in excavating their underground dwelling. These ants are larger insects than the tree-dwelling ants ; they are about three-eighths of an inch long, and seem to exist in great numbers in their homes, the entrance being like a crowded street, with passengers going to and fro. They may be met with all round their nests, often at a considerable distance from

them, frequently tugging along pieces of sugar-cane, or portions of dead insects, enormous in size compared with themselves.

The ants are the scavengers of the country ; no beetle, or worm, or grub, or animal matter of any kind, can be many minutes on the ground before it is detected by some ant, who immediately makes it known to her fellows, and they at once fall on the spoil, cut it in pieces and convey it to their stronghold. It is astonishing to see the heavy loads that two or three ants will stagger along with for the common good. So we see that among these little creatures there is co-operation, and mutual help, and often self-sacrifice for others ; well may they have been called by the observant king of Israel, although " a small folk," yet " exceeding wise."

Another species of ant does not appear to make a nest, but inhabits the crevices and under the bark of trees ; it is rather conspicuous from a small cushion of pale-brown velvet on the upper side of its body, and a smaller one on the thorax (the part to which its six legs are attached). Its eggs and pupæ are carefully hidden away behind pieces of the bark which have become partially detached ; and if you pull away a piece, what a hurry-scurry there is to hide away these precious treasures !

On the coast plains of Madagascar, there are numbers of earthen mounds from two to three feet high, to be seen dotting over the open downs. These are the nests of a large white ant ; and these are said to feed a small serpent which makes its home in the lower part of the anthill, and when it is fat enough, they kill it for food for themselves.

This, I believe, is not " a traveller's tale," but is said to be a fact by Malagasy in many different parts of the great island.

Now let me tell you something about the Bees of Madagascar, at least about one kind, for there are said to be many score different species found in the country, and this is the bee from which we get excellent honey. When we used to go occasionally for our Christmas holiday at the Mission Resthouse close to the great forest, our children—and we elders too—always looked forward to getting honey from the woodmen.

This was generally brought to us in a round wooden box made from a trunk of a small tree, and sometimes with the honey and the wax-comb all broken up together. But we often got the honey in large flakes of white or yellowish comb, with each beautiful six-sided cell full of the sweet liquid.

In walking through the woods one sometimes becomes conscious of a sickly sweet smell somewhere near us. This proceeds from a hive of bees not very far away, generally in the hollow of a tree. The honey is usually excellent, although sometimes a little bitter, through being obtained from the flowers of certain trees.

The Madagascar bee differs but little in appearance from the English species, although it is somewhat smaller, darker, and more gentle when handled

than our own kind. Like those in European hives, so in Madagascar, the drones are idle insects and are killed off at certain times of the year. The bees continue to store honey during the winter months, although that is the dry season, with few flowers, and they will work in all weathers, even during a heavy thunderstorm.

The enemies of the Madagascar bee are rats, ants, wasps, and especially the death's-head moth. He enters the hive fearlessly, for although the bees crowd around him, they have no power to stop him, as their stings cannot pierce that downy body, with its tough skin, but merely slip along it harmlessly. As soon as he is within, he keeps his wings vibrating with a low humming noise and leisurely sucks his fill—a very long fill.

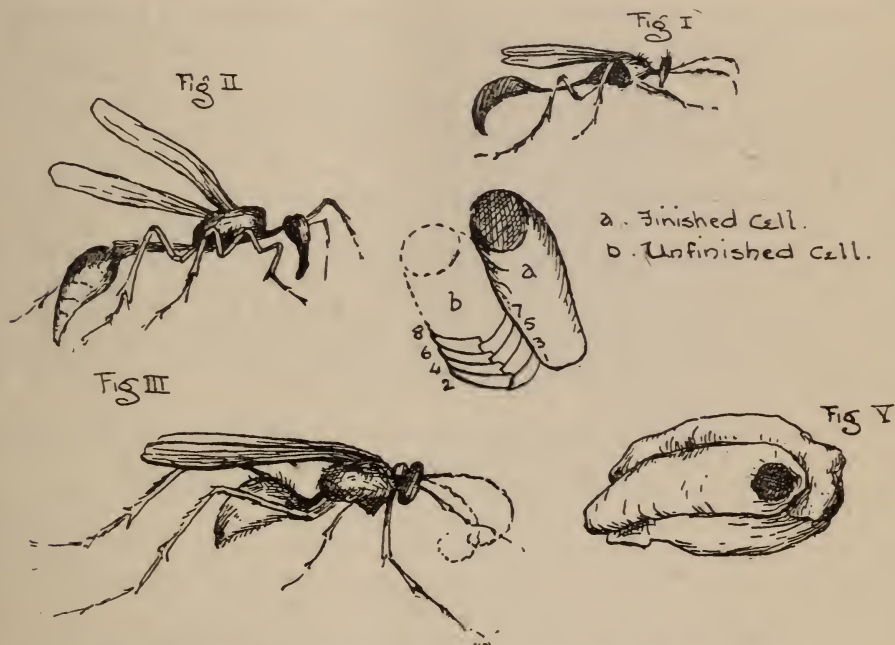
The damage he does is immense, for he gobbles up honey, wax, and young bees; hives have been found sucked dry, with not a drop of honey left, so the poor bees are obliged to go away and make another home for themselves.

Another enemy is the wasp, which seizes the bees when returning to the hive for the sake of their laden honey-bag, and it also kills them outright with wonderful quickness.

THE SOLITARY WASPS

AND THEIR CELLS

PEOPLE who live in Madagascar often notice a small, longish lump of light-coloured clay stuck under the eaves of the house, or on the side of a window, or, in fact, in any sheltered place. If we break off a piece of it, we shall find that this lump of clay contains a number of cells, half a dozen or more—all filled with caterpillars or spiders in a numbed and half-lifeless condition.



The Solitary Wasps of Madagascar and their Cells

In centre is the nest of the wasp in Fig. 1.

The marks 1, 2, 3, 4, to 8, show the progress of cell building.

Fig. V. is the finished nest.

The maker of these cells is a black wasp about an inch long, with russet wings, and as one sits in the veranda of one's house one may often hear a shrill buzz somewhere up in the rafters, and there the little worker is busy bringing in little pellets of clay with which she builds up the walls of her cell, just as a bricklayer adds bricks to build up a house.

Presently she is off again for another load to the banks of a little stream, where she has her brickfield. Kneading the reddish earth with her jaws, she quickly forms it into a little pellet of clay about the size of a pea, which she dexterously picks up and flies away back to the veranda. This pellet is placed on the layer already laid, carefully smoothed and joined on to the rest; and so she goes on until the cell is finished. (See Figure 1 in illustration.)

A friend of mine, who was a careful observer of animal and insect life, found that about twenty-six journeys finish one cell, and that on a fine day it takes about forty to fifty minutes to complete it.

This is only one, however, out of many cells placed on the top of each other.

My friend also found that in storing these cells with food for the grubs of the wasp, the number of spiders enclosed in eleven cells varied from eight to nineteen. These are caught by the wasp, stung so as to be insensible—so it is not cruel, as it at first sight seems—but not killed, so that when the eggs are hatched, the grub finds itself in the midst of food. (See Figures 4 and 5.)

Another species of these solitary wasps is a much larger insect, about two inches long, and she makes nests, which are extremely hard, and are like little native waterpots, and arranged regularly one above the other. Unlike the wasp just mentioned, this one does not fetch the clay for her pottery from the banks of a stream, but carries the water to the dry earth, which she then damps and kneads up into balls. The cells are stocked with caterpillars, which are stung and numbed in the same way as the spiders are treated by the first-named wasp. There are usually three caterpillars placed in each cell. (See Figure 2 in illustration.)

Another wasp, also very common, does not build cells, but digs a burrow in the ground, even in pretty hard places like a well-trodden road.

Some of these use caterpillars for stocking their burrows, some large spiders, and some crickets, but all drag or carry their prey on foot. One small wasp, when carrying a spider, first cuts off all its legs and then slings the body beneath her. The burrows of the larger wasp are deep in comparison with the size of the insect, being frequently a foot or more in depth.

There is one very small wasp, which makes no cell or burrow but chooses a long hole in a piece of wood, or a small bamboo, or a hollow rush, for the rearing of its young. Each kind of wasp seems to have its peculiar way of hunting: some run it down on foot by scent for long distances: some dash down violently into the web of a spider, and catch him as he drops from out of it; while others again, especially the social wasps, seize their prey upon the wing. The males of all the different kinds are lazy and do no work.

It will be seen that these solitary wasps do good service by reducing the number of caterpillars and other insects which destroy vegetation and eat up the leaves of useful plants. There are of course many species of wasps which

live in communities and do common work, and have a large nest where they live together. Some of these make pretty six-sided cells, very like those in a bee-hive, but they are made of a grey paper, and not of wax.

I heard a lecture some time ago about paper-making, and how, long before the people of Europe could make paper, it was made by the Egyptians and the Chinese and other ancient peoples. But ages before that, these little wasps were paper-makers, and, as I have shown in preceding paragraphs, wasps were also brickmakers and builders and potters long before men learned these useful arts.

ABOUT THE CROCODILE

A DREADED MONSTER

MADAGASCAR, as already mentioned in these pages, is remarkably free from the large and fierce animals found in most tropical countries, such as lions and tigers, and wolves and leopards. But there are in the waters of the great island, in all its rivers and lakes, any number of a very dangerous reptile, viz., the crocodile.

Before the conquest of Madagascar by the French in 1895, we had no roads ; and when rivers had to be crossed by the people, they were mostly forded, if not too deep, or the passengers were ferried over in a native canoe. But on account of the fewness of the canoes and the rude and rough bridges which were occasionally made over the streams, the people usually waded through the waters with their cattle, and were often seized by these hungry crocodiles.

In order to frighten away the crocodiles, the people, when crossing the rivers, used to go over in a body, with loud shouts and beating the water with sticks, and making all the noise they could. I have watched them going over a river in this way, and have been amused to see them tuck up their clothes and plunge into the stream.

On one occasion I was waiting for a few minutes while my baggage and my bearers were ferried across a very small but rather deep river ; and walking a little way from the ferry, I was startled to come across a good-sized crocodile in the long grass on the bank. However, he was as much surprised as I was, and immediately shuffled off into the water with a big splash ! Soon after this, a large party of Malagasy forded this same river, and I felt that their shouting and noise was quite necessary with such an unpleasant creature not far away.

Among the many charms which all Malagasy formerly believed in, and in which all the heathen tribes still believe, was the *ôdy mamba*, or charm against crocodiles.

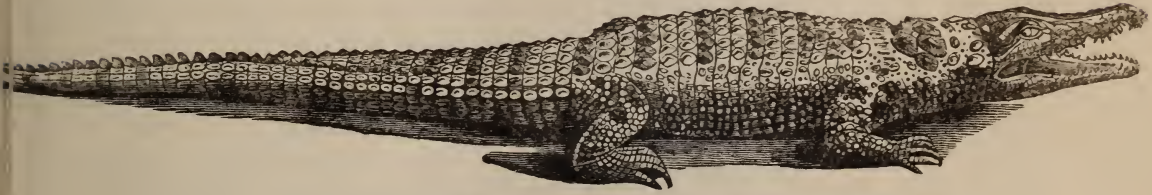
Some years ago, while taking a long journey of nearly three months, my companion and I were frequently travelling by canoes on the rivers of the south-east coast ; and on one of the largest of these we found that at every village on the banks there was a place enclosed by strong stakes, so that the women and children going to draw water might not be seized by a crocodile, or swept off by a stroke of its powerful tail ; for cattle and sheep are often carried off in this way, and not infrequently women and children also, who incautiously go into or even near the water.

The Malagasy have a superstitious dread of these monsters, which prevents them from attempting to kill them. They rather try to propitiate the

creatures by prayers and offerings thrown into the water, and by acknowledging their supremacy in their own element.

At Itàsy, a lake fifty miles west of the Capital, the people believe that if a crocodile be killed, a human life will, within a very short time, be exacted by the animal's companions as an atonement for his death.

Two or three French travellers once shot a crocodile in this lake, and such was the people's consternation and dread of the consequences that their visitors found it well to leave the neighbourhood as quickly as possible. The eggs of the crocodile are collected and sold for food in the markets, and are said to be perfectly good, but I confess I never brought myself to try one. They are larger than a duck's egg, but have a very rough shell.



The Crocodile

The Malagasy have two names for the crocodile: one is *màmba*, a word derived from the African Swahili language, and the other is *voày*, a Malayan word, altered from its original form of *boày*.

As might be expected, they have many fables and many proverbs about this dangerous reptile. One of these latter is: "An angler carried off by a crocodile; each one takes what he likes": *i.e.* the fisher takes the fishes, and the crocodile takes *him*! Another is: "A dog hunted a crocodile, and then the crocodile had his turn." An unfortunate person who is in the power of a hard-hearted creditor is said to be like one in the grasp of a crocodile, for he will never get free: "Once in the jaws of a crocodile, there's no getting out."

When returning to England on furlough many years ago, we had to travel part of the way to the north-west coast by canoe, and for four days we sailed down one of the large rivers. We saw about twenty to thirty crocodiles each day, some on the sandy islands in the middle of the stream, and some basking in the sunshine on the banks, and near enough to be splashed by the paddles of the rowers as we passed along. They were generally lying with their jaws wide open; and most of them were light grey in colour, but others slaty, and others again spotted with black; they varied in length from seven or eight to fourteen or fifteen feet. The head is rather small, and the back and tail is serrated like a great pit-saw.

In Mr. Houlder's interesting and amusing book, "*Among the Malagasy*," he tells a story of Moosa, one of his servants, who used to go every morning to a marsh to gather a kind of arum. One day, while busy over his work, his foot was suddenly seized by a crocodile, fortunately a small one. Finding that it was no use punching the creature's head, he caught hold of one of his claws, and then commenced a real tug-of-war. The crocodile pulled for his dinner, but Moosa pulled for his life; and being a big strong man, exerting all his strength, he began to prevail. Then the crocodile, in his astonishment, opened his mouth wide and allowed the poor fellow to escape; a very rare thing for any one to accomplish. The incident is illustrated on the cover of this book.

The above story confirms what another traveller says, namely, that even in small pieces of water, not knee deep, these destructive reptiles are often found lurking, so that in many parts of Madagascar great caution is necessary in crossing quite small streams.

A crocodile's tooth used to be worn as an amulet or charm, and silver ornaments made in that shape formed part of the adornment of the Malagasy in former times; while a golden crocodile's tooth was the central ornament in the royal crown. And among the Tanàla, or forest people, there was (perhaps still is) an "ordeal by crocodile." In this test, the person suspected of wrong-doing was taken to a river known to be full of these reptiles. Before the people assembled to see the proceedings, a man stood behind the accused and struck the water thrice, and addressing the crocodiles, he begged them to show whether the accused was guilty or innocent. He was then made to swim a certain distance and back again, and if he accomplished this and took no harm, the accuser was fined four oxen: of these, the swimmer got two, the king one, and his councillors one. Probably few people escaped this ordeal with life. We may be thankful that the rivers and lakes of England contain none of these dangerous creatures.

ABOUT THE LEMURS

ANIMALS WHICH STORE FOOD IN THEIR TAILS

MADAGASCAR is the headquarters of the Lemurs, or four-handed forest animals, for although there are half a dozen kinds of small creatures which are somewhat like them—distant cousins, in fact—found in Africa and in Asia, the true lemurs are only found in Madagascar, and there are nearly forty different species of them.

But you will perhaps ask, "What are these lemurs like?" They belong to the large class of animals called *Quadrumana*, or "four-handed," because their feet take hold of the branches of the trees in which they live as easily as do their hands. Almost all of them live in the dense forests which extend for hundreds of miles all along the eastern side of Madagascar, and they make their home in the loftiest trees.



The Ruffed Lemur (about $\frac{1}{20}$ th full size).

The lemurs have not the often comical and half-human look of the monkeys, nor are they savage creatures like many of the apes and baboons, for they are mostly gentle and timid in their ways. The largest species are about three feet in height, while the smaller kinds are, some of them, only nine inches long, and the smallest of all is only four inches in length, but it has a tail six inches long. Most of these animals sleep by day, but are very active during the night, as their eyes are large and

brilliant, the pupil expanding widely in the dusk to receive the faintest ray of light, and contracting again in the daytime like those of a cat. From these habits comes their name of lemur, which is from the Latin word *lemures* or "ghosts."

The larger species of lemur differ very much in colouring: some are entirely white, except for a black patch on the head just like a cap; others are black or dark brown; others are reddish brown; and others again are grey in colour. One species, which is perhaps the best known of all—some examples were formerly, if not at present, in the Zoo—is called the Ring-tailed Lemur, because its tail is ringed with black and white bands; this animal lives not much in the woods, but chiefly on bare rocks. Those lemurs whose home is in the trees hardly ever come to the ground, except very occasionally to drink water.

Many of the lemurs live together in small companies of four or five to ten in number ; and as I have travelled many times through the forests, I have frequently heard their long-drawn-out melancholy cries, a wailing sound as of people in distress, or children crying. Yet it was always a pleasant sound to me as a sign of life, and probably of enjoyment, in these active and harmless dwellers in the woods. They are not easily seen, as they keep at a great height near the top of the trees ; but I remember once seeing a pair of beautiful brown lemurs pass through the forest close by me, and they leaped with wonderful quickness from tree to tree, so that I can quite believe what hunters say, that it is more easy to shoot a bird on the wing than a lemur darting through the woods.

From the nocturnal habits of the lemurs, several of the Malagasy tribes regard them with superstitious fear and honour ; one of these tribes, called *Bé-tàni-mèna*, should they find one of the kind called the Short-tailed Indris in captivity, always set it at liberty ; and if they happen to come across one that has been killed, they will reverently bury it. They believe that their ancestors, after death, change into a species of lemur, which they call *Baba-kòto* (that is, "Father-child," or "boy"), and so they think that the trees where these animals live supply charms which are infallible remedies against otherwise incurable diseases. It is this species whose cries are frequently heard in the woods on the road from Tamatave to Antanànarivo.

There are six or seven kinds of the animals which are called Dwarf and Mouse Lemurs, from their very small size, and they are perhaps the most attractive of them all, and are really the most pretty little creatures that can be imagined. They have very large and resplendent eyes, and these admit so much light at dusk that quite a remarkable brilliance is produced. Daylight appears to be painful to them, so they sleep during the day, but are extremely active during the night. In the cooler winter months they also sleep, having previously stored up in their bodies, especially in their long tails, a good supply of fat ; they then retire to their nests in hollow trees, and, curling themselves snugly up, sleep away several weeks until the hot weather returns again. The fat is slowly absorbed, so that when the animal arouses from its slumber, it is thin and lean, and the tails quite small. These little lemurs make a globular nest, exactly resembling those made by birds, with a quantity of dried leaves.

While some of the living lemurs, as we have seen, are so small, in former times there was a kind of lemur inhabiting Madagascar which was very much larger than any existing species, for it was three times the size of any of those now living. In the Government Museum at Antanànarivo, the bones of this extinct animal have been put together, so that it can be seen how very different a creature it was from any now found in the great African island.

Besides this largest species, many other kinds of extinct lemur (fourteen or fifteen in number) have been recently discovered, that is, their bones, some of them forming links between this family of animals and the monkeys. Some of these byegone creatures appear from the position of their nostrils, eyes, and ears—all in a line—to have lived mostly in the water, as the hippopotamus still does.



THE FOOSA

THE MADAGASCAR PUMA

I DARE say some readers have been asking what fierce and dangerous animals are to be met with in Madagascar ; and have perhaps been surprised that I have said nothing about lions and tigers, or wolves and bears.

The fact is, we have none of these large and savage animals in Madagascar, neither have we any venomous snakes ; so that we can go into the forest, hunting for ferns and wild flowers and mosses, without any fear of danger.

There is, however, a small but very ferocious animal of the cat kind, called the Foosa (or, as the Malagasy write it, Fòsa), about which I will tell you a little.



The ferocious Foosa

This Foosa, whose long and rather awkward scientific name is *Cryptoprocta ferox*, belongs to the great order of animals called the Carnivora or flesh-eaters, and is of the same family as our household cat and the lion, the tiger, and the leopard.

From the picture you can see clearly what it is like ; it has a long and lithe body, which is about two feet and a half in length, and a tail nearly as long, and it stands about fifteen inches high. In its structure it resembles the jaguar, and in its colouring the puma of South America.

It is, indeed, a very handsome creature, being covered with thick glossy fur of a tawny-brown colour, but it is very much smaller than either of those beautiful but dangerous animals. But although so small it is very ferocious, as its scientific name implies (*ferox* = fierce), and, for its size, is very strong.

It is not dangerous to man, however, unless it is attacked, and is wounded, but it is very destructive to poultry and small animals. The Malagasy will always get out of its way if they see one coming towards them.

Mr. Pollen says : " One day my hunter Zoudza, while engaged in hunting lemurs in the neighbourhood of our camp, perceived, all at once, when coming up from a hollow, a foosa approaching him, panting at the time. The poor man, trembling with fear, flung down his musket and saved himself by climbing a tree, where he remained until the animal disappeared among the bushes." The same Dutch traveller and naturalist tells of a foosa he killed, which was a destroyer of the first rank, for in a very short time he had carried off two turkeys, three geese, and twenty fowls ; and the people also said that he had seized young pigs and other domestic animals.

The foosa also climbs trees in pursuit of the lemurs, which live in the forests. So if the natives happen to catch one in a trap, they do not fail to kill it with their spears in a rather cruel fashion.

You have no doubt heard of an animal living in South America called the skunk, which, when attacked, emits a most nauseous and sickening smell, which cannot be got rid of, even for years. The foosa has the same most disagreeable kind of habit, although happily it is not such a powerful and enduring smell as that produced by the skunk. The foosa lives chiefly in the warmer parts of Madagascar, on the extensive plains to the west, but it is also found in the eastern forests. I once saw a specimen which was entirely of a glossy black colour, possibly a distinct species from those which have dark-brown fur.

There is this also to be said about the foosa, viz. : that it is one of many living creatures which are found in no other country but Madagascar, so that there are no other animals like it in any other part of the world ; it has no near relatives anywhere else. And I may just say here that Madagascar is a kind of museum of both birds and animals and insects, which are not now found on the continents, but only in the great island. No doubt there were such creatures both in Africa and Asia in former times, but other more powerful birds and animals came upon the scene and gradually destroyed them, while in the island they have had few enemies and so have held their own.

To see them in their real habit of life, one must watch them in their home in the Madagascar forests ; for there, from their mode of attack, they appear like a small puma, or perhaps more like an immense weasel, attacking not poultry only, but large animals, such as the wild boar, and even oxen. One may be thankful that this beautiful but fierce little creature is not found in our British woods.

SNAKES AND LIZARDS

SUCKER FEET FOR WALKING ON CEILINGS

DID any of you ever see a book upon Ireland and its inhabitants? There are several chapters in this book, and one of them is entitled "On the Snakes in Ireland"; but it is the shortest chapter of all, for all it says is, "There are no snakes in Ireland" (!). Now, I am not going to say there are no snakes in Madagascar, but I am happy to tell you that there are no *deadly* snakes in that great island; that is, there are no kinds whose bite causes death. It is, you know, very different in most tropical countries. In India, thousands of people are killed every year by snake-bite; and I remember that when I lived there some years ago for six months, how we were warned not to go into our own garden at night without a lantern or a torch, lest we should be bitten by a snake, and were told also not to lean against a stone wall at any time, because in the crevices

between the stones, cobras and other snakes are almost always hidden. And even in this England of ours we have an adder or viper whose bite is sometimes fatal, unless strong remedies are immediately applied.

There are a good many species of snake in Madagascar, but most of these we see in the cool interior provinces are small, only a couple of feet long, or less, and are pretty harmless creatures, slatey-brown in colour, and striped with fine white lines along their whole length. Their chief food is frogs and small lizards, and occasionally a chameleon, as I told you in the first section of this book. There are some larger species than these, and one which was



The Serpent

from three to four feet long once got into the bedroom of our house at the capital, and it was difficult to dislodge it, as our servants were afraid to touch it. Indeed, the Malagasy are very unwilling to kill a snake, and will much rather drive it off into the bushes than injure it in any way, as they believe some harm would come to themselves if they did it harm.

In former times, when Madagascar was almost entirely heathen, one of the chief idols was called *Rà-màha-vàly*, that is, "One able to answer," or "Able to avenge," and it was supposed to be the patron of serpents. When the idol was carried in procession on public occasions the idol-keeper and its attendants used to carry a live snake in their hands, its twisting and twining about being looked upon with fear by the people. The English representative at the capital in 1827, a Mr. Lyall, happened in some way to offend the persecuting Queen Ranavàlona I; and so, no doubt by her directions, the idol-keepers let loose in the courtyard of his house a large number of snakes, as a sign of the idol's anger. And although these reptiles were non-poisonous, it must have been sufficiently annoying to have a number of them squirming and wriggling about one's premises and probably getting into one's house as well.

In the warmer coast regions of Madagascar, snakes are larger and more numerous. Travelling one day to Tamatave along the coast, on the grassy plains between the lagoons and the sea, I saw on the grass a large and beautifully-marked serpent; so I got down from my palanquin and followed it to observe its ways and admire its handsome colouring. But it turned and raised its head and came towards me, as if angry; and as their bite, although not deadly, often inflicts a painful wound which is difficult to heal, I thought it safest to beat a hasty retreat. On the same day I saw a beautiful small snake, but of great length, and of a bright green colour, twined round the trunk of a tree; this colour was no doubt a "protective resemblance."

My friend the Rev. John A. Houlder gives an account of another kind of serpent which he met with on the north-east coast. This kind is called *Akòma*, and is a species of boa, killing fowls, rats, and other creatures by crushing them in its folds, and then covering them with saliva before swallowing them. At a village where he stayed he found the people much excited about a large serpent seen in their neighbourhood. Sending out his men to find it, 'at last the creature was seen, a villainous-looking monster, coiled up among the bushes, with his great flat head in the middle of the circle. Advancing to within a couple of yards or so, I raised the gun. Bang! Away went the onlookers for their lives. Peering through the smoke, I could just see the head coming toward me. Enough! I bolted, too! But it was a groundless alarm. The serpent was incapable of doing serious injury, and no other shot was necessary." Mr. Houlder did not get the dead reptile

into the house without difficulty, owing to the terror of the bearers, even when it had been killed. "It was a medium-sized specimen, about nine feet long and about as thick round the middle as the calf of a man's leg. On each side of the body was a long yellow, black, and reddish chain-like marking on a brown ground, and near the extremity of its tail were two abortive claws."

Although neither belonging to the snakes or lizards, but to a much lower class of animals in the scale of created life, I will add here a few words about the earth-worms which are seen on the Imèrina downs and in the outskirts of the forest. These are about four times the size, both in length and thickness, of those we see in England; and when I first saw a small group of them they looked more like small snakes than worms. Mr. Darwin's researches on the part played by earth-worms in the constant renewal of the soil have shown us what a valuable work these humble creatures do for our benefit; and on a morning after the rain has fallen in Imèrina, the grass is sometimes almost covered by the innumerable little mounds of fresh earth brought up by worms, thus confirming what he has told us, and that what worms do in England they do also in Madagascar.

The Lizards of Madagascar are small animals; the largest one that I have seen is an unpleasant-looking creature, nearly two feet long, of which the tail is about one foot.

But a much smaller and prettier kind is not uncommon, with delicate markings. Other species in the south-west region vary in length from six to nine inches. And in the woods, on the fleshy leaves of an aloe, we may see, basking in the hot sunshine, a beautiful little bright-green lizard, or darting over the surface with such a rapid movement that it is difficult to observe it closely. Its colour is so exactly like its *habitat* that it is doubtless a "protective resemblance." In the coast houses small lizards are often seen running on the under surface of the ceilings, darting after flies; and although their feet are like a boy's leather "sucker," by which stones can be lifted up, they frequently lose their hold and fall down on the table. When this is the case, their tail often drops off, and continues wriggling about for some time afterwards.

While staying at our Sanatorium one holiday time, a very curious tree-lizard was brought to me by some boys. But as I have already described this creature in the section on "Protective Resemblances" (see p. 17), it need not be repeated here.

The most interesting point about this lizard was the wonderful resemblance of its colouring to the bark of a tree. The minute scales of its skin were mottled with brown, grey, green, and white, so as to exactly resemble tree bark, with the usual clothing of moss and lichen, and precisely the same in colour, so that until examined minutely one could hardly believe that the small patches of colour on the animal's skin were not also due to vegetable

growths. It was difficult at a few inches distance to see where the lizard began and the wood ended ; and in the forest it would be impossible to distinguish it from the branch to which it clings. It proved, on being sent to England, to form a new genus of lizard.



Village and Forest in Madagascar.

FLYING AND CLIMBING FROGS

AND A FROGS' CHORUS

THE majority of the species of frogs in Madagascar are not very different in colouring or size from those we see in England; in their pretty markings of green and grey and brown tints, they are extremely numerous, for, in addition to the marshes and small streams, every rice-field is, during a great part of the year, under water (see p. 36), so that there is plenty of space for them to live their half-dry-land and half-watery life. As one walks along the low earthen banks which separate the rice-fields, and which form the footpaths in every direction, the frogs basking in the warm sunshine jump off and "plop" into the water at every step one takes. Whether "froggie would a-woooing go" at such times, I am unable to say.

In the early morning, after a rainy night, the noise of their croaking is very loud, almost deafening, even at some distance away from the marsh or rice-field, for the frogs apparently find the increased depth of the water very much to their liking. But for the number of their enemies, in the shape of small snakes and birds, especially the white Egret, which lives all day in the rice-fields, the number of the frogs would soon so increase that they would become like one of the "Plagues of Egypt."

The tree-frogs are very pretty little creatures, their light-green colour exactly matching that of the leaves on which they live, so that it is very difficult to detect their presence, except by close inspection, or unless they move while you are watching for them. Their toes end, not in claws, but in small discs or suckers, so as to adhere closely to the smooth surface of the leaves. Another species of frog, a rather large one, is of a beautiful golden-bronze colour, and is found on the immense leaves of the great arum lily, which grows by millions along the lagoons and river estuaries of Madagascar. A flying-frog is also said to be found in the island. In this pretty little frog the toes of each of its four feet are very long, so that the thin membrane connecting them has a very large surface, larger indeed than that of their entire body; so that, while they are not able to *rise* high in the air, there is quite sufficient in the membrane connecting the toes to sustain them in passing over a considerable distance in the air, in a gentle descent from one tree to another.

While speaking of this membrane between the toes of a frog's foot, did anyone ever show you a portion of one under a good microscope? The skin is so thin that the innumerable veins can be seen quite plainly; and along these, the red and the white corpuscles in the blood can be observed passing

in great numbers, like people in a crowded street, or in fewer numbers in the smaller veins, like those in a narrow lane. These minute globes are bringing food to the body, and taking away the waste material in it. It is no cruelty to the little frog to examine him thus, only a little inconvenience to him for a few minutes, while he is put into a damp bag and two of his toes are tied with thread to keep the thin skin stretched tight. And so it is all over our own bodies; in every vein and artery the blood is constantly bringing food to keep us alive and strong, and removing the worn-out portions of our flesh.

During a walk in the forest one day, not very far away from our Sanatorium, I was fortunate enough to see a rather rare frog which is peculiar to Madagascar. This little creature is only an inch long, as regards its body, but on that, and its hind legs, there are oval patches of bright red on a black ground, so that it is very conspicuous in the clear water, or when basking in the sunshine. There is also a much larger frog, quite a giant among frogs, for it is three inches in length, and the hind legs five inches long; this great fellow appears to be also a tree-frog as well as a water-frog, for he also has little discs at his toes instead of claws.

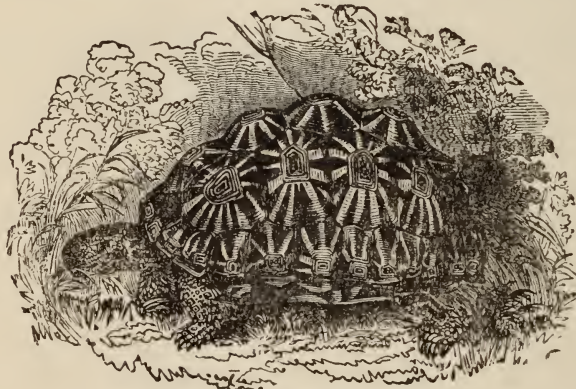
One more among these interesting little Madagascar frogs must be mentioned, namely, one which makes a nest and covered ways to it. These frogs construct regular passages under the grass during the dry season; their paths are made as exactly as those of a mole by the little creatures pressing down the short grass near the earth, and drawing together the longer blades, so as to make themselves invisible. The nests are from eight to ten inches in diameter by four in height, and made ingeniously by weaving the layers of grass together. When frightened, these frogs throw out a limpid stream of water, which has been stored up in time of need, as in very dry weather, and this is distributed over the body so as to keep the whole of it moist. So much for what I have seen and heard about our Madagascar frogs.

Do you know how to make a "Frogs' Chorus"? It is great fun if you have plenty of players in the game. Get them to sit in a row. The first must say, "Red wine, red wine, red wine," and the second must say, "White wine, white wine, white wine," over and over again as soon as the signal to start the chorus is given. All along the row the players must be saying either "Red wine" or "White wine," and they must say it loudly. When they are all taking their parts you will *really* know the noise that the frogs make when they rejoice over the rain!

TORTOISES AND TURTLES

AND TURTLE CATCHING

MOST English boys and girls know what kind of animal a Tortoise is ; for the small ones, which are brought to this country from the shores of the Mediterranean, are often bought as pets and allowed to creep about in the garden. These are, however, little creatures, only a few inches in length, and are small compared with several species which live in Madagascar. During a voyage of four days I took some years ago down one of the large rivers, we saw these large tortoises very frequently on the sand-banks and islands, enjoying the warmth of the hot sun, for they are cold-blooded animals. The carapace or upper shell of these tortoises is divided into large hexagons, beautifully marked and of various shades of



Geometric Tortoise

brown and grey and yellow. The upper and lower shells of one I afterwards procured on the coast were about eighteen inches in length.

In former times the lakes and marshes of Madagascar were inhabited by an immense species of tortoise, whose remains have been found, together with those of the huge birds about which I told you in a former chapter.* They are now extinct on the mainland of the great island, but seem to have survived in the small islands of Mauritius and Réunion until a very recent date ; but they are still living and are numerous in the little island of Aldabra, which is about 260 miles north-west of Cape Ambro. And if you go to the Zoo, you will

* The *Æpyornis*, see p. 18-20, *ante*.

see two living specimens of these huge creatures. The male tortoise is five feet five inches in length and five feet nine inches broad. It is believed to be able to carry a ton weight on its back ! It is now more than one hundred and fifty years old, but is still young and is likely to grow to a much greater size.

In the sea off the west coast of Madagascar a large species of Turtle is fairly abundant, and the Sàkalàva, who live in that region, are very clever in catching them. Turtle soup, you know, is considered a great delicacy, and forms a standard dish at great feasts in England ; and the Malagasy are no less fond of its flesh. The turtles come up to the surface of the sea in the early morning, when there is little wind and the water is smooth, and there they take a morning nap, enjoying the heat of the sun. The natives go out to sea in canoes and have to be very quiet and cautious in approaching the sleeping turtles, for the slightest noise alarms them, and they immediately plunge below the water.

If, however, the hunters manage to get close to the sleeping turtle without arousing it, one of them strikes it with his harpoon, to which a long cord is fastened. Of course the animal immediately dives deep down into the sea, and the hunter must keep fast hold of the line ; should the line be too short, he still holds fast and dives down with it, until the turtle comes up again. It is extraordinary to see how clever these Sàkalàva men are in diving and the long time they can remain under the water without much apparent difficulty or harm.

When the turtle is secured and taken on shore, the people of the nearest village gather together to receive the hunters, and carry them in the canoe, to some distance from the sea. Everyone is called upon to partake of the turtle feast, and these are the curious customs they must observe : Nothing is allowed to be brought from a *house* to the place where the turtle is cooked. It has to be cut into pieces for cooking with knives belonging to the canoe ; it is cooked in sea water in the shell of the turtle itself, and served in scoops or other vessels from the canoe, or in pieces of turtle-shell. None of the flesh must be brought into a house to be cooked or eaten there, and other food must not be eaten together with it. Even the everyday *lamba*, or outer dress, has to be taken off and laid aside when going to a turtle-feast.

All this, they say, is *hlin-dràza*—commands of the ancestors—and must be strictly observed, or the turtles, they believe, would disappear from that part of the coast.

BALL-INSECTS AND OTHERS

SOME IN SHINING ARMOUR

DID you ever spend an hour or two in the Tower of London? If you have done so, you would see, among a hundred other things, a large number of suits of ancient armour, and figures of men on horseback and on foot covered with plates of steel to protect them when fighting in battle. We do not make much use of armour nowadays, and yet in the great war, now happily at an end, our brave soldiers have had their heads covered with steel caps to give them protection from the bullets of the enemy. And you have heard of, and probably most of you have seen, the armoured cars or "Tanks." And if you are a Londoner, and can take a walk along Whitehall, you will see at the Horse Guards two cavalry soldiers on horseback, and with steel plates protecting both back and breast, as well as their helmets of brass.

But long ages ago, before men or steel plates were known in this world, many living creatures were fitted with suits of armour to protect them from their enemies. One of the most beautiful of such defensive coverings is that worn by the lobsters and the crayfish, and even by the prawn and the shrimp. And while we have these armoured creatures both in England and Madagascar, there are also in the last-named country several kinds of a many-footed and armour-covered insect, about which I want to tell you a little in this chapter.

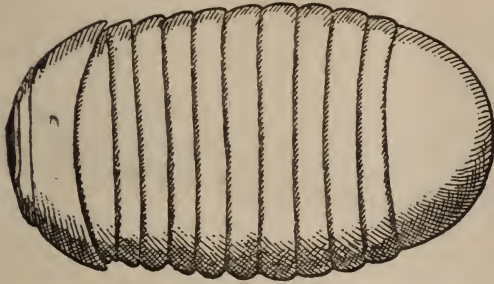
These insects are called by scientific folks, who give long names to all sorts of animals, *Sphærotherium*, or "Ball-insects," and of these there are several different kinds in Madagascar. They are wingless, but have instead about ten pairs of short legs, and are called Ball-insects because they have the power of instantaneously rolling themselves into a perfect sphere, which form they retain as long as any danger threatens them; and no force, short of pulling them to pieces, can make them unroll.

The creature is formed of nine or ten segments, each with a pair of legs and covered with a plate of armour; while the head and tail are defended by larger plates, each of which fits exactly into the other, and makes with the other nine pieces a more perfectly-fitting suit of armour than was ever worn by mediæval knight.

There are at least six species of these pretty and curious creatures already known in Madagascar, and others probably still await further research. The most common kind in the interior is one which forms a ball about an inch in diameter and shining black in colour. Another kind, more rarely seen in the open country of Imèrina, but common enough in the upper belt of forest,

is of a beautiful brown colour like russia leather, and is quite double the size of the shining black one just mentioned. In passing through the broader forest belt a few years ago, we came suddenly one day to a part of the road

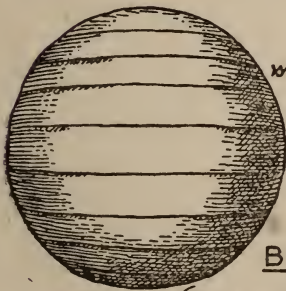
from above



when walking



side view.



when rolled up.

BALL-INSECT

(*Sphærotherium acteon*)

(full size)

which was so thickly covered by such a great number of these ball-insects that my bearers could not avoid trampling on many of them. These were bronze-green in colour, evidently a still different species, and were more than three inches in length, making when rolled up a ball about two inches in diameter. Other species of these creatures are found in Africa, Asia, Australia and some of the neighbouring islands. The Malagasy call them *Tain-kintana*, or "Star-droppings." I am sure you would like to see them, and to find how rapidly they make a ball of themselves, and how fast they keep that shape.

Another many-footed and wingless creature is common enough in the upper forest, for we often found it on the upper veranda of the house where we used to stay; this is a shining black Millipede (i.e. "Thousand-legs"), about a foot in length, and three-quarters of an inch in thickness. It is called by the natives *Kōdikōdy*, and its very numerous reddish legs, not far short of a thousand in number, have a curious effect of successive waves as it moves along. And each of its two or three hundred segments is also covered with a plate of shining black armour. Although not very inviting in appearance, it is quite

harmless and is a vegetable feeder. There is also a different species, which is marked along its whole length with black and red lines.

More unpleasant by far is another many-legged creature common in

Madagascar, the Centipede (i.e. "Hundred-legs"), whose sting is exceedingly painful, resembling the puncture of a hot iron, and which is not uncommon in the interior as well as in the forest. The mere touch of its minute claws, if it happens to crawl over one, is said to produce pain and inflammation. I have turned small centipedes out of the hole in a window-sill where the bolt would fall, and once killed a large one marching across our bedroom floor. Happily, these, which are among the few noxious creatures we have in Madagascar, very seldom do harm to a European, and we may be glad that they are unknown to us here in England.

We must remember, however, that all these creatures have their use in God's great plan of creation, whether we know what that is or not; for they probably feed upon substances or other living things that would do harm, were there not these checks upon their too great abundance.

CROWS AND CUCKOOS

HOW A BIRD SAVED A MAN'S LIFE

IN the preceding chapters I have said little about any of the birds of the country, except one of those huge birds which are now no longer living, and are known only by their immense bones and enormous eggs.

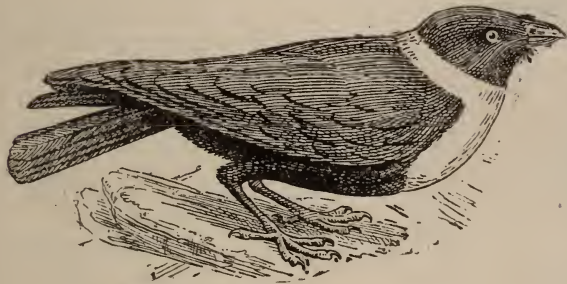
And yet there are many beautiful feathered creatures in the woods of Madagascar, several of them with curious habits, and about whom the Malagasy have many proverbs, and who figure in a number of their fables and songs. And I want here to tell you a little about the Crows.

We all know what an English crow is like ; a rather large bird, shining black in colour, whose "Caw-caw" is frequently heard in the fields. The Madagascar crow is much the same size and shape as our English bird, but instead of being all black, it has a collar and breast of pure white, so that it has a very clerical appearance.

It is called by the Malagasy *Goàika*, a name nearly imitating its harsh croak, and is very common everywhere, being often seen in large numbers, especially near the great open-air markets, where it picks up a living from the refuse and the scattered rice. He is a bold and rather impudent bird, often fighting with the smaller hawks, who seem to delight

to "mob" him, if they can get the chance. One day, walking with a friend near our mission station, we came upon a large flock of crows, and, wishing to obtain a specimen, my friend fired and shot one of them. For a moment or two there was a dead silence, but after a few seconds the whole flock set up an angry scream of rage and defiance and, flying swiftly backwards and forwards, came so close to our faces that I feared they would strike at our eyes. Their anger at the death of their comrade was unmistakably shown in their behaviour.

This crow is occasionally kept by the Malagasy as a pet bird, and is sometimes trained to scare the fowls away from the rice, which is laid on mats to dry in the sun. Its nest is placed on trees or rocks, and is defended fiercely from all enemies. Many Malagasy proverbs refer to the crow, three or four of which may be quoted here, thus : " Like a crow's coat—finished while it's young"—that is, it never changes its fashion in clothes ; " Many



"A very clerical appearance"

are the crows, but one can't tell the cock-bird from the hen, for both have white necks"; and another says: "Don't be lustrous outside only, like a crow," a warning not to trust in appearances; and, again, "Although many birds were there, it was the crow that ate the earth-nuts," he only was the sinner and the thief.

Of Cuckoos in Madagascar there are fourteen different kinds. The one we know best and hear most frequently is called the *Kankàfotra*; but he is not with us in the interior and cooler regions of the country all the year, but, like our English cuckoo, he comes up to us only when the hot season commences, and after five or six months goes down again to the warmer forests and coast plains. Do you know the old rhymes about the cuckoo?



Madagascar Cuckoo (*Kankàfotra*)

"In April, Come he will;
In May, He sings all day;
In June, He alters his tune;
In July, He prepares to fly;
Come August, Go he must."

That is something like the habits of the *Kankàfotra*, although it keeps the same note, with only slight variations. In spring and summer here in England, we constantly hear the call, "Cuckoo, cuckoo"; but the Madagascar bird's call is "Kow-kow, kow, koo," repeated several times; and if two birds are near together, one will answer the other's call until it be-

comes rather wearisome. Like the cuckoos in other parts of the world, the *Kankàfotra* lays its single egg in the nest of other and smaller birds (or carries it to those nests); and as soon as the young cuckoo is hatched, he begins to shoulder out of the nest the little chicks, the offspring of the proper owner of the nest, and shoves them out altogether, so that they fall to the ground and perish miserably. Yet the little wretch is still fed by the birds whose young ones he has treated so abominably until he can feed himself. So we cannot take the cuckoo as a model of right behaviour, either old or young.

Another cuckoo which also comes up into the interior in the warm season, but is far less common than the *Kankàfotra*, is called the *Toldho*. This native name is probably imitative of its mellow flute-like call, which consists of several notes running down the scale. Some have compared it to the sound of water gurgling out of a bottle, but it is a most pleasing sound. This cuckoo builds its own nest, which is ball-shaped, with a very small opening at one side.

The *Toloho* is considered a sacred bird by some of the west-coast Malagasy. M. Grandidier says that having on one occasion shot one near the sea, he was obliged, in order not to grieve the family living near, to leave the body of the bird, which was immediately reverently buried. The reason of this extreme respect for the *Toloho* is as follows : One of their ancestors, who was swimming across a large river, was caught on the way by a crocodile. These reptiles do not devour their prey on shore, but carry it to their lurking-places under or close to the water, to be eaten later on. Our hero was carried quite senseless to a large hole on the bank of the river, and which the ebbing tide had left partly dry, fortunately with his head just above the surface of the water. Suddenly he was roused from his torpor by the repeated cry of a *Toloho*. Starting out of his lethargy, it was not long before he realised that he was not buried very deeply, and so, not staying for the return of the crocodile, which was waiting at the entrance of the cave, he used his hands to such effect that in a little time he saw daylight. He was saved ; and in recognition of the service, all unconscious as it was, which the bird had rendered to their ancestor, his children and grandchildren vowed that neither they nor their descendants would ever kill a *Toloho*.

FINE FEATHERS & QUEER SKULLS

A BIRD WITH A HELMET

THE last chapter was about Crows and the Cuckoos, and presently we shall hear about the Hawks and the Owls. Here I want to say something about other birds of the great African island which are worthy of notice from their attractive colouring, and others from their unusual form.

Although it is true that we have not in Madagascar some of the most gorgeously coloured tropical birds, such as the cockatoos and paradise-birds of New Guinea, or the toucans and humming-birds of South America, we have some species of a bird which, in their metallic and constantly changing colours, rival the humming-birds in beauty. These are the Sun-birds, whose feathers are like gems and glow like rubies and emeralds, sapphires and amethysts, especially when the sunlight falls upon them at different angles. If you go to the South Kensington Natural History Museum you may see specimens of these lovely Sun-birds, and you cannot help noticing the numerous glass cases containing Mr. Gould's great collection of humming-birds. Who can look at such exquisitely beautiful little feathered creatures without wonder and delight ?

One of the most noticeable birds seen in the central provinces of Madagascar is the Cardinal-bird, which is not much larger than an English sparrow, nor unlike it in colour during half the year ; but when the warm season advances and the mating-time comes, its colour changes to a brilliant scarlet, as its name implies, so that as it darts about in the sunlight it looks like a living flame. It is, however, only the cock-bird which is thus coloured, the hen-bird remains in a sober brown dress all the year round. At the nesting-time, that is in October and November, the male birds often fight furiously with each other, sometimes falling from high above the trees to the ground, and still fighting as they fall. These birds are often seen in large flocks in the rice-fields, where they do much damage to the crops.

Being so plentiful and conspicuous in colour, the Cardinal-bird, or *Fody* (pronounced *Foody*) as the people call it, has long attracted the attention of the Malagasy, and it is frequently alluded to in their proverbs and folk-tales and children's games. In one of these last-named, after a short dialogue, the leaders cry out, lifting up their arms with hands joined as in a country dance,

“ It's the Cardinal-bird's house ” ;

to which the whole troop of children cry out, as they pass under,

“ It's a red house.”

One may often hear this play-song going on among the children on a bright moonlight night.

Other species of this bird, which inhabit the forests, are called the "Crafty fòdy," from their skill in making their nests. These are in the form of a retort, that is, a globular nest, where the eggs are laid, with a long neck, or entrance, a foot or more in length, hanging downwards. This nest is fixed at the end of a branch and often over a running stream, so that it must be very difficult for a snake or a lemur to steal the eggs or the nestlings. It is wonderful how the beak and claws of such little birds can weave together such beautiful and secure nests to protect their young.

In the numerous streams and canals which bring water to the rice-grounds, one may often see a bird like a bluish-purple flash of colour sweeping over the surface in pursuit of its food. This is a species of Kingfisher, whose general tint is a rich blue or purple, with a breast of warm brown, and not unlike the kingfisher which lives in our own country. Another Madagascar kingfisher is only seen along the forest streams, and is yellowish-red in colour.

But perhaps there is no bird more noticeable from its numbers and its colouring than the White Egret, which is often seen in flocks of from two or three hundred or more feeding in the rice-fields. These beautiful birds are pure white in colour, except for a plume of pale yellow at the back of the head. When we lived at Ambòhimànga, our first station, we used to notice in the dry and cold season that a large flock of these egrets used to settle towards sunset on an open piece of ground opposite our house. After resting there for a short time, one of them would rise, as if to give the signal, and then the whole flock would fly slowly away and settle on the trees at the north-west side of the hill of Ambòhimànga, so as to be sheltered from the strong south-east winds. Here they showed very plainly from a long distance as a great patch of white. It was amusing to see how numbers of them flew about from tree to tree, before settling down for the night, as if popping in for a little gossip with their friends about the events of the day.

These egrets are called by the Malagasy *Vòrompòtsy*, i.e. "White-bird," but by several tribes they are also named *Vòron-tiàn-dmby*, i.e. "Birds liked by cattle," because they are constantly seen following the herds of oxen, often perched on their backs and shoulders, where they free the animals from certain ticks and other insects which torment them. On this account these birds are greatly valued by the Malagasy, and they greatly dislike to see them shot by Europeans.

There are eighteen species of Heron and Stork in Madagascar, and one of them especially attracts the attention of all who travel about in the country, from the enormous nest which it constructs. This stork is called by the people *Tàkatra*, and its nest, being from four and a half to six feet in diameter, is visible from a considerable distance, and might be mistaken sometimes for a load of hay fixed on the fork of a large tree. It is dome-shaped, with an entrance at the side, and is divided into three chambers, in one of which its

two large eggs are laid. The entrance is by a narrow tunnel, and is difficult of access. Probably from this conspicuous nest, as well as from the grave and sedate way in which the Tàkatra marches about seeking for its food, many native superstitions have gathered about the bird, one of which is that those who destroy its nest will become lepers. And while the central tribes were still idolators, it was believed that it was very unlucky should a Tàkatra fly across the path along which the idols were being carried; in such case they were immediately taken back to their dwelling-house.

In many tropical countries Parrots, Cockatoos, and Macaws are very numerous and very conspicuous from their brilliant colours. In Madagascar we have two species of Parrots, but they are both of sober plumage, one being dark grey in colour, and the other slaty black. But they are both intelligent birds, and can easily be taught to speak and to whistle a tune. Their long whistling cry, as if going up the gamut, may be frequently heard in the woods. Both species do not make much use of their claws to convey food to the mouth. A black parrot lived for fifty-four years at the Zoological Gardens in London, and died apparently merely of old age.



The Helmet-bird's head and skull bones

But there is a Madagascar Parrakeet, which is a lively and brightly coloured little bird, light green in colour, with greyish-white head. These are found in considerable numbers all over the island, for they go in large flocks, often as many as a hundred together, all ceaselessly chirping during their rapid flight. The two sexes show great affection for each other, the pair sitting close together on the same perch, from which habit they are often called Love-birds. My friend Mr. Baron says: "A flock of them settling on a bare tree gives it the appearance of being covered with foliage. On one or two occasions what we thought the leaves of trees suddenly disappeared, leaving the branches entirely bare. The 'leaves' turned out to be parrakeets."

The last bird to be noticed here is a very curious and interesting one from its very peculiar shape, and also because there is no bird at all like it anywhere else in the world. It is called the Helmet-bird (*Euryceros*), and is remarkable for a beak formed like a very capacious helmet, which is prolonged just as far as the eyes; this is terminated by a sharp hook. The

extraordinary form is seen best in the skeleton, in which the beak is seen to be considerably larger than the skull. The bird is as large as a starling, velvety-black in colour, with a saddle-shaped patch of light-brown on the back. The large beak is steely-blue in colour.

Such, very briefly described, are a few of the two hundred and more kinds of birds we meet with in Madagascar, especially in the central provinces. There are, of course, many others whose appearance and habits are well worth notice ; and very numerous are the proverbs and stories and legends, which have gathered about them, and show that the Malagasy are not unobservant of the living things in their island home. Were all these collected together they would form a good-sized book ; indeed, I have myself made a small collection of such facts in a work of eighty pages from observations made during many years' residence in Madagascar. (*Madagascar Ornithology*).

BUTTERFLIES AND MOTHS

AS WELL AS OTHER INSECTS

AS is the case in all tropical countries, Madagascar possesses a large variety of insect life, and among these are a considerable number of the most beautiful of all insects, Butterflies. The greatest number of species are of course found in the lower and hottest regions of the island, but there are a good many also in the upper and central provinces. Hovering over the surface of a small river which we had to cross by the rude bridges of former times, I have seen hundreds of a large blue and black papilio butterfly, so that they were very conspicuous even from some distance. As one comes near a patch of damp sand at the edge of the stream, a little cloud of small butterflies, blue, white, buff and yellow, is often seen drinking up the moisture, or gambolling in the air. Dr. Vinson, a French naturalist, who came up to the capital some years ago, said: "In the misty mornings—in the Madagascar cold season—every insect sleeps or hides itself under the damp foliage, but as soon as the sun shines out, the footpaths through the forest and the beds of the torrents are peopled with bright-coloured and light-flying butterflies. They give themselves up to all kinds of frolic with a wanton joy; they court, they pursue, they fly, interlacing and eddying in their flight in the air like the brilliant flakes of a coloured snow."

In travelling up through the eastern forest, I was struck with the number and variety of the butterflies which crossed our path. There was the rather common one of greyish-green with dark markings, the dark-brown one with two large blue spots, the widely-distributed warm-brown one with black-edged wings, the pure white one, the white with orange edges, the white with black edges, the white with small black spots near the edge of the wings, the small yellow species, the small buff one, the white with crimped edges, and many others.

In our own garden at the capital, three or four butterflies were constant visitors to our flower-beds. One of these was chocolate-brown, with three large white spots on each wing; another was metallic-blue, with little eye-like spots, the wings flashing in the sunlight; and another, a large insect of warm-brown, used to lay its eggs just under a leaf. One day I was curious to see what these eggs were like under the microscope, and found that each egg was a lovely object thus magnified, of beautiful shape, and sculptured and fluted like a Greek vase. And then the caterpillars of many of these butterflies are also very beautifully coloured. We had a small oleander tree in our garden which used to be almost stripped of its leaves by large green caterpillars from four to five inches long, and these were most handsomely marked with lines of red and white. In some species, a large spot near the

head on each side is like an eye, and when the caterpillar raises up its head it has a most threatening appearance, although, of course, it is perfectly unable to do any harm; an instance, it might be called, of "warning resemblance."

But the most beautiful of all the Madagascar butterflies is called *Urania*, and is a lovely insect with golden-green, crimson and black markings, and edged all round its wings and its half-dozen "tails" to the wings, with pure white, like a delicate fringe. During 1899 this butterfly was unusually abundant, while in some seasons it is very scarce. In the mission garden at Ambòhimànga they appeared to be intoxicated with the strong flavour of the nectar from the loquat trees, then in flower, so that almost any quantity of them could have been captured in the early morning, for the flowers have a powerful scent of prussic acid. The Malagasy call it *Andràndòlo*, i.e. "King-butterfly," no doubt admiring its lovely colours.



King-butterfly (*Urania ripheus*)

The Moths are, of course, seen chiefly at dusk, and some of these are very large and handsome, especially the one from whose cocoons silk is produced. This moth is a beautiful insect, with shades of buff and brown and yellow, and a large eye-like spot on the hind wings. Another moth, somewhat like the silk-producing one in colouring, has an extraordinary development of the hind wings, which have long delicate tail-like appendages, narrow in the shaft, and enlarged at the ends, and these have also two spiral twists. This insect is about eight inches long and as much broad across the wings. Some species of moth, dark-brown in colour, and yet beautifully marked and shaded, often fly into our houses at night, the female being much larger ($5\frac{1}{4}$ inches) than the male ($3\frac{1}{4}$ inches). The Malagasy are afraid of seeing these very dark-looking insects, which they call *Lòlom-pàty*, i.e. "Death-moths," in

their houses, as they think them presages of evil and death. Another moth, with death's-head marking on its thorax, is also often seen.

There are several other moths, from three to four inches across the wings, whose fat bodies are cross-striped with red and brown, and which come out

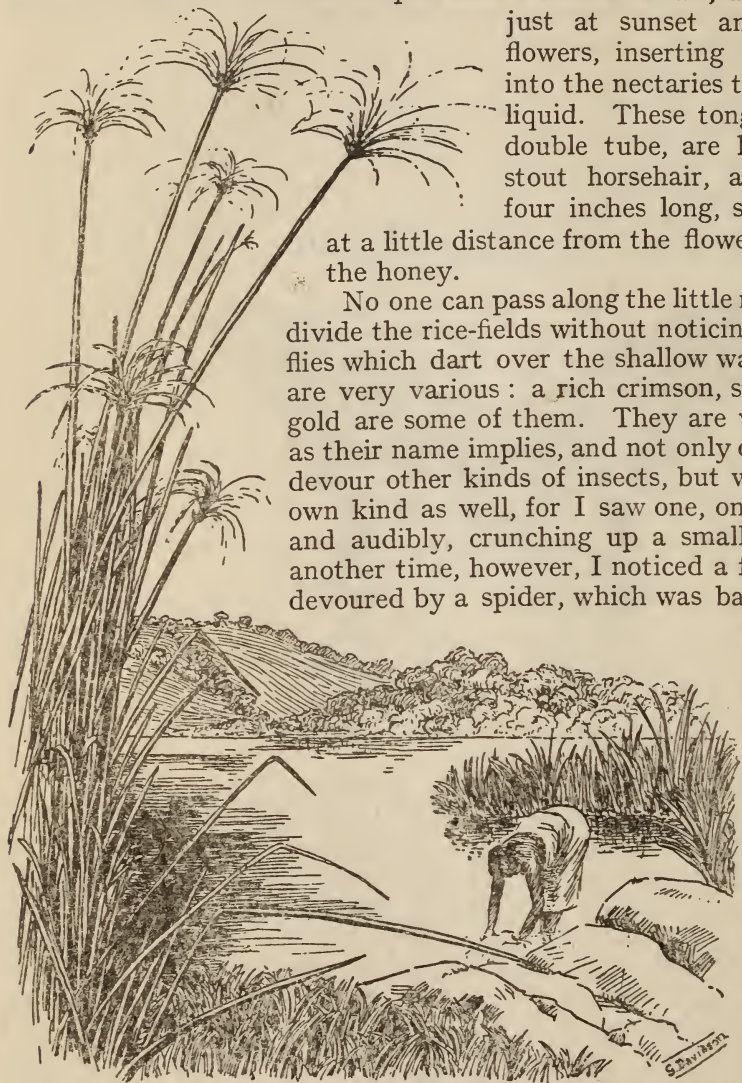
just at sunset and dart about the flowers, inserting their long tongues into the nectaries to suck up the sweet liquid. These tongues, which have a double horsehair, are hardly finer than a stout horsehair, and are more than four inches long, so the moth hovers

at a little distance from the flower it is probing for the honey.

No one can pass along the little narrow banks which divide the rice-fields without noticing the large Dragonflies which dart over the shallow water. Their colours are very various: a rich crimson, steely-blue, and old-gold are some of them. They are voracious creatures, as their name implies, and not only do they capture and devour other kinds of insects, but weaker ones of their own kind as well, for I saw one, one day, deliberately, and audibly, crunching up a smaller dragon-fly. At another time, however, I noticed a fair-sized one being devoured by a spider, which was barred with lines like

a zebra, so that a very voracious and powerful insect is occasionally a victim to a crafty insect.

Whenever one crosses or walks along a stream in the central provinces there are sure to be seen several varieties of Water-beetles disporting themselves in mazy circles on



The home of the Dragonfly

the surface of the water. Some of these are called water-boatmen, others water-scorpions, and they, like the dragon-flies, are very voracious creatures. One of these water-beetles, called *Tsingàla*, causes death if swallowed by cattle or human beings, unless a remedy is promptly applied.

One of my brother missionaries wrote this account. He says: "I was travelling one very hot day and, passing by a dirty pool, one of my bearers stooped down and drank with his hands and then hastily followed to carry the palanquin. Presently, hearing sounds behind, I turned and discovered that this same man was now in agonies of pain. He stood throwing back his head in a frantic manner, at the same time shrieking most hideously. His companions immediately said: 'He has swallowed a *tsingàla*.' I immediately got down and went back to the poor fellow; he was lying on the ground and writhing in agony, and I felt that unless something could be speedily done, the man must die. My other bearers called to the passers-by, but none could give any assistance. Presently a Bétsiléo was appealed to, and he said that he knew what would cure him, but wanted to know how much money we would give. I said that it was no time for bargaining, but that I would give him sixpence if he relieved the poor man of his sufferings. Off he ran to procure some leaves, with which he returned in about two minutes. He soaked them in water from a stream close by, and then gave the sufferer the infusion to drink. Within a few moments the poor fellow showed signs of relief, and after drinking the infusion several times, he said he was free from pain, but felt very weak and faint. It was some weeks before the man got thoroughly strong again."

I have said nothing in these chapters about another great class of insects, viz., the Beetle, by which word you must understand that I don't mean those horrid creatures we call "black beetles," but insects which are, in numberless instances, very handsome, as well as curious in their shapes. Thus we have in Madagascar several species of horned-beetles which have large horns something like those of a stag; others are brilliant with metallic colours of all shades, which change as you turn them over in different lights. Others are very gaudily coloured. Yonder is a bush which is conspicuous from some little distance from the quantity of insects clustered on it; they are about half-an-inch long, and are most brilliant with scarlet, blue and green. Be careful, however, how you handle them, for their scent is anything but agreeable, and these gaudy tints are no doubt "warning colours," like those of the "dog-locust," about which I told you in the fourth chapter, and they are probably as nauseous to the taste as they are offensive to the smell.

I should need a number of coloured plates to enable you to realize all the varieties of beetles one may see in and near the forest where we used to take our holidays occasionally. For instance, the most common kind is a broad flat insect, about an inch long and dull brown in colour, which crosses

one's path at every step. Another is seen chiefly on the bushes, a smaller insect but bright shining jet-black. Another, which is shot with brown and green, with very long legs, is constantly taking short flights or running rapidly. You all know the English "ladybird"; we have many kinds of that pretty little beetle in Madagascar, but the most beautiful one is a species which is simply golden in colour, so that its wing cases are like a piece of bright gold jewellery. And you have probably, especially if you live in the country, seen the "glow-worm" when walking out of an evening. This insect, I believe, is not found in Madagascar, but we have another kind which gives a much more brilliant light, viz., the Firefly. These insects I have seen scores of times when staying on the coast or travelling along it. When taking a long journey some years ago, we were overtaken by the darkness long before we could find anywhere to stop in for the night, but several times we thought we saw the lights in a village, or some one coming along with a lantern, but it was only the beautiful little fireflies dancing up and down in the bushes, a "will-o'-the-wisp" which deceived us again and again. These flies do not give out a continuous light, but one which—like some lighthouses—is quenched every second or two, the interval of darkness being rather longer than the time when the light is visible.

Speaking of caterpillars, as we did two or three pages back, reminds me of a species which makes a curious home for itself and its companions, for one cannot pass many yards along a forest path without noticing here and there a long white bag hanging on the trees and bushes. These vary in length from six inches to a foot, or even eighteen inches, and are a long oval in shape. The upper part shines with a silky lustre, and the whole would do so but for its being filled at the lower part with a mass of dark-brown earthy substance, which soils its purity. On cutting open the upper portion of the bag, which is tough and strong, I found it to be filled with a mass of brown caterpillars, about an inch and a half long, all wriggling about when disturbed in their comfortable home. The dark substance was evidently the droppings of the caterpillars, and the small openings at the lower end gave exit and entrance, for generally two or three of the insects were seen crawling outside. It would appear, then, that this silken bag is the nest or home spun by the caterpillars, a common habitation in which they undergo the next change before becoming perfect insects. I always noticed that the branches near that on which the bag was suspended were stripped of the leaves, no doubt by its inmates. I also found that a day or two after I had cut open one of these bags a thin film of web had been spun over the opening, so as to close up the entrance I had unceremoniously made into the privacy of the little community.

During the cool season—that is, in July and August—several kinds of caterpillars are in a state of torpor. Here, for instance, is a cluster of a dozen

or so of brown caterpillars, all clinging closely together around one another on the top of a small twig, and perfectly motionless ; are they not hibernating ? Here, again, is a collection of beautiful little caterpillars, about an inch long, of lovely pale-green and bluish-green colour, with markings of orange dots along the sides, and tufts of yellow hairs on head and tail. They lie side by side, half-a-dozen together on a leaf, and also do not move for several days together. Here, again, on a leaf, are about thirty caterpillars, about five-eighths of an inch long. These are striped with dark lines like black velvet, with delicate markings and spots of bright yellow. These insects, like those just mentioned, are motionless and crowded together, as if for warmth.

Would you not like also to stroll through the forest paths where so many beautiful and curious things are to be seen ?

HAWKS AND OWLS

AND A FISHING EAGLE

ITOLD you in a previous section that we had more than two hundred kinds of birds living in Madagascar; of these two hundred species, a tenth part of them, that is, exactly twenty, belong to that class of birds which prey upon other living things—smaller birds, reptiles, insects and fish.

The largest of these rapacious birds is the Fishing or Sea-eagle, which inhabits the western coast of Madagascar, and the small islands off the west of the mainland. It is a large and handsome bird and keeps watch on a tree or cliff at the edge of the water. Like a flash of lightning it swoops down into the sea after its finny prey, and yet it can stop its downward flight in a moment. If the fish is too large to be carried in its talons, it beats the head with strokes of its powerful wings, and then tows it to shore, the wings acting as sails.

There are innumerable little bays and inlets on the north-west coast, and where a pair of these eagles takes possession of one of them they will allow no other eagle to encroach on their own domain, and as soon as the young eaglets become old enough to

provide for themselves the parent birds drive them away from the nest and the neighbourhood. The Malagasy call this eagle *Ankoày*, probably a name imitating its cry of *hoai, hoai*.

There are many species of Hawk and Kite and Falcon in Madagascar; of these, the most common is the *Papàngo*, or Egyptian Kite, which may be seen every day flying gracefully along in search of the lizards and snakes, and the rats and mice and young birds which form its chief food, and continually swooping down on its prey. I have often observed scores of these birds hovering in the air, or describing great circles at an immense height.



The Fishing Eagle

The country people detest the Papàngo, for it often darts down on their chickens or pigeons, and is only scared away by their loud cries and execrations; but although it may sometimes carry off the fowls, it is very useful in destroying vermin. Many native proverbs refer to the bird, especially to its boldness and rapacity; for instance, "Acting like a kite's claws; not taking gently but greedily."

Another very widely-spread rapacious bird is the lively and noisy little Kestrel, which is often seen perched on the gable-horns of the houses, or even on the extreme point of the lightning-conductor. It is by no means shy, and one can sometimes approach it quite closely and see its bright fearless eyes before it darts away. It is fond of the same resting-place, and after a noisy chatter with its mate, takes a sweeping flight for a few hundred yards and returns to its former position. Its name of *Hrtsikitsika* is practically the same all over the island and is probably an imitation of its peculiar querulous cry. Several native proverbs refer to the kestrel's quick restless flight and its habit of hovering aloft, poised almost motionless, with an occasional quivering of the wings, which the Malagasy call "dancing," for the native dances consist chiefly in graceful posturing of the hands and arms, with but little movement of the feet; thus, "The kestrel is not dancing without reason, for there below is something (in the way of prey)."

Among some native families the kestrel is a tabooed or sacred bird. M. Pollen says: "Being one day hunting near the shore I shot one of these kestrels, when a farmer came to meet me, saying I had committed sacrilege in killing, as he said, a sacred bird. He begged me to leave it to him, so



The Barn Owl

that he might bury it in a sacred place. I hesitated, except to grant him the beak of the kestrel, which had been broken by the shot. The good man, accompanied by a slave carrying a load of sugar-canes, and happy to be able to honour any part of the sacred bird, tried to express his gratitude by offering me half of the load." A small piece of the leg or wing of the kestrel was given by the diviners as a charm, and many of the people venerate these birds.

Six or seven species of Owl are known in Madagascar, one of them, the Barn Owl, being identical with that found here in England, and indeed almost all over the world. As among most other peoples, owls are regarded by the Malagasy as birds of ill-omen, and this is not strange when one thinks of their nocturnal habits, their large staring eyes the uncanny ear-like feathers of some, and especially their unearthly screech as they fly by night. The people call it *Vòronòòlo*, i.e. "Spirit-bird," thinking it an embodiment of the spirits of the wicked, and its screech is believed to be a presage of misfortune to some one. Yet, like the owls in all parts of the world, the Madagascar ones are really public benefactors by keeping down the rats and mice and other vermin, and deserve protection and thanks instead of persecution.

My wife for several years used to go to several of the larger villages in our mission district to teach the children in the day schools. One day as she went on with a Scripture lesson, she noticed that one of the boys kept frequently starting, as if something had hurt him, and at the close of the teaching this boy fetched out from under his *làmba* a beautiful owl which he had brought her as a present! And his starts and slight jumps had been caused by this owl digging his sharp beak now and then into the boy's bare legs and body! I wonder how many English boys would have patiently borne for an hour or two such an uncomfortable pet in order to give pleasure to their teacher.

SOME "ODD FISH"

AMONG THEM A FISHING FISH

IN the interior of the island of Madagascar there are remarkably few *kinds* of fishes in the rivers and lakes. We have certainly very fine and large eels; there are great quantities of gold- and silver-fish and other small fry in the marshes and the rice-grounds, which are under water during a large part of the year; and there is a smaller number of fishes of excellent flavour, one called *Màrakèly* and another called *Tòhovòkoka*, not to speak of crustaceans, such as shrimps and crayfish.

The shrimps are very small, but they are caught in vast numbers and give a relish to the rice, which, as described in a previous chapter, is the chief food of the Malagasy. As soon as the rice has been reaped, the water in which it has grown until harvest-time is frequently dredged by the women and children, not only for fish, but also for all sorts of other small creatures which they use for food. They push before them a large and long basket-dredge or sieve, and every few minutes lift it up to examine what they have caught; this is thrown into a small basket carried on their head or chest. But not only fish and shrimps are used by the people for food, but a great variety of other things as well, as a relish to their rice. Many of these are very repulsive to our English notions, for instance, snails, locusts, certain grubs and caterpillars, and even, so it is said, some species of beetle and spiders! Some years ago, as two or three of us were taking a ride through the rice-fields near Ambòhimànga, our former mission station, we saw some girls dredging for fish in the shallow water, and thinking we might perhaps buy some to take home, we called to them to bring the basket for us to see. But on inspecting the produce of their labour, we found no fish, but a heap of brown, crawling, wriggling, slimy creatures, most uninviting in appearance, and, in fact, disgusting, considered as possible articles of food. This "water relish," this mass of creeping animal life, consisted of shrimps, water-beetles, tadpoles, and the larvæ of many kinds of insects. It is needless to say that we did not purchase any of these tempting delicacies, but I believe they would all go into the pot in some Malagasy house that evening and give a relish to the rice of some native friends.

In the lower reaches of the large rivers which flow towards the western coast there are, however, many fishes of strange and brilliant colours. These are striped or banded across or obliquely with bright blue and scarlet, or orange and black, so as to be very conspicuous in the clear waters, and are much like some of the gorgeously coloured fishes which are found among coral reefs, feeding upon the living coral polyps. One species might be called

the "Leopard-fish," because, as you see from the illustration, it is covered with leopard-like spots, even on its fins. Another fish has its so head thickly covered with sharp spines that it would be a very unpleasant mouthful for any larger fish which attempted to swallow it.

On the coasts of Madagascar, that is, in the lagoons and river mouths, as well as in the sea itself, there is a large variety of fish. Among these is one called *Botàla*. These fishes are covered all over with rough prickles, and as soon as they are taken out of the water they inflate their bodies by filling their stomachs with air. If replaced in the water they rest like a blown-up bag; suddenly, out goes the air, and they are off like a flash. Another



LEOPARD FISH

(*Epinephalus cylindricus*)

fish, called *Làdintavia*, is found in the rivers and is white in colour and covered with a kind of slime, which is thick like soapsuds. It goes in shoals, so that one haul of the net will sometimes bring in hundreds of them, which look as if they were all floating in a thick lather of soap.

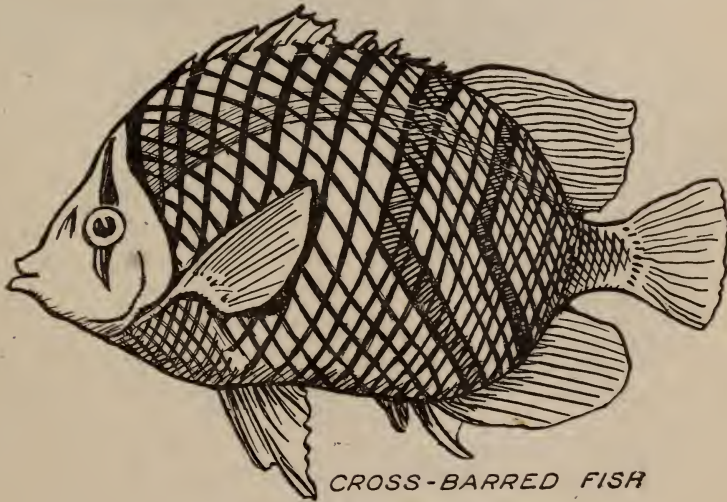
A very excellent fish, called *Olòvo*, is also a very large one, often reaching seven feet in length and weighing over two hundred pounds. Perhaps the most delicious of all the Madagascar fish is a species of mullet called *Zòmpona*. The coast Malagasy esteem it highly, and when a person is evidently dying, some outsider is sure to say, "Ah, he (or she) won't eat *Zòmpona* again." Several species of large shrimps and prawns are caught on the coast, and these latter especially are considered when curried as a very dainty dish. Large numbers of small red crabs are always seen on the sands of the shore, watching at the

mouths of their holes, and down which they instantly disappear as we approach them. One or two species of the Madagascar crabs have one of their pincers enormously enlarged, so that it is quite as large as their bodies, while the other claw is very small indeed. This great arm, bright pink in colour, the little creature carries held up in a ludicrous, threatening manner, as if defying all enemies.

Besides the edible fish just mentioned other well-known oceanic fish are often caught, such as several species of shark, the porpoise, the hammer-headed shark, and the sawfish ; this last is often fourteen feet long.

On the north-west coast a fish called *Hamby* is often caught. Its length is about that of a man's arm and its back fin is just like a brush and has a liquid about it sticky like gum, and when it fastens on to another fish from below with this brush, the fish is held fast and secure. On account of this peculiarity of the Hamby, the people use it to fish with ; they confine it in a wooden cage, which they fasten in the sea, and feed it daily with cooked rice, or cassava, or small fish. When they want its services they tie a long string round its tail and let it go, following in a canoe, and as soon as the Hamby fastens on a fish they pull it in and secure the spoil. Not only fish but even turtles, so it is said, are caught in this manner.

Perhaps the most extraordinary fish found off the coasts of Madagascar is one which, when caught, discharges a large quantity of a substance resembling glue, so that if it is placed in a bucket or small vessel, the contents become almost a solid mass and can be turned out in one large lump.



CROSS-BARRED FISH
(*Chaetodon xanthurus*)

It will be seen, then, that not only on the dry land and in the forests of Madagascar are there many living creatures of very interesting and curious shapes and habits, but that in its waters also, both inland and surrounding it, there are many creatures worthy of notice and study, some of whom may truly be termed very "odd fish."



Boys Fishing with Traps

THE OX OF MADAGASCAR

WHOSE HUMP IS HIS LARDER

IT would not, I think, be right in this little book treating of Malagasy animals, to leave out all notice of the largest and most prominent of them all, namely, the Ox, or, as the people call it, the *Omby*. This fine beast is not a true aboriginal inhabitant of the great island; but it is so long ago, probably several centuries, since the first oxen were brought over from the African coast, that they have become perfectly naturalised in Madagascar and are found in large numbers wherever there are human inhabitants. The word *omby* is without doubt the same as the Swahili word *ngombé*.

These oxen have very long horns and are distinguished from European cattle by having a large hump between the shoulders. In other respects their appearance does not differ much from our English bulls and cows, and the quality and flavour of their flesh is not much inferior to English beef.



The hump, which consists of a marrow-like fat, is considered a great delicacy by the Malagasy, and when salted and eaten cold is very acceptable to Europeans. When the animal is in poor condition the hump is much diminished in size, being, like that of the camel in similar circumstances, apparently absorbed into the system and partly supplying the insufficiency of food. It then droops partly over the shoulders.

A herd of Malagasy oxen is a fine sight, from the variety of colour and beautiful markings of the different beasts. When fattened up, as they used to be in old times, before the national feast at the New Year, many of them were magnificent animals; and so it is not strange that the word for bull (*ombelàhy*) was used frequently in public speeches as an emblem of strength, as it was the largest and most powerful animal known to the Malagasy. In this sense it was always used in certain ceremonies after the birth of a son, and in the songs and various congratulations the boy was hoped to become as strong as a bull, so as to fight bravely and overcome his enemies. The kings were also sometimes called by the same name as an honourable title.

The cruel sport of bull-fighting was a favourite amusement of the Malagasy sovereigns; and in digging the foundations for a new gateway to the palace yard at Antanànarivo some years ago, the remains of a bull were discovered, wrapped up in a red silk *làmba*, the same style of burial as that employed for rich people. This was the honour paid to a famous fighting bull belonging to the heathen Queen Rànavàlona I. In ancient times the killing of an ox was regarded as a semi-religious or sacrificial observance, and only the chief of a tribe was allowed to do this, as priest of his people.

At the New Year's festival, in the times before the French conquest, large numbers of oxen were killed, almost every family having one; while the sovereign had twenty or thirty in the royal courtyard, where I remember seeing the poor beasts lying with their legs tied together before their slaughter on the following morning. It was no easy matter going about the narrow and rough roads of the capital for a day or two previous to the festival, for in every direction oxen were being driven in from the country to their owners' compounds in the city. Then, on the new year's morning, Antanànarivo was like a vast slaughter-house, and for some days afterwards was very offensive from the blood and remains of the animals killed in every house-yard.

At funerals also oxen were killed in numbers proportionate to the wealth and rank of the deceased person. So, on one occasion, when a man of very high position died, an ox was killed at every few yards all along the road from the city house he lived in to the country house where the tomb was, a distance of a mile or more. Almost everyone attending a funeral would therefore get a large piece of beef to take home with him. At the new year a fine ox was always sent from the Queen to the English residents in the capital, and its meat was divided out among us all. The chief officers and others of our native friends used also to send us fine joints of beef, this being termed, "Flesh-meat, to hold fast friendship." We had, of course, at such times far more meat than our household could consume, so that we were glad to be able to send a number of joints of beef to our poorer Malagasy friends. When we English missionaries were invited to preach before the

Queen in the Chapel Royal, a large piece of meat was always sent to us on the previous day, presumably to give us strength for the Sunday's duties!

An old Malagasy saying thus describes the various uses of the different portions of an ox when killed: "The ox is the chief of the animals kept by the people, and our forefathers knew well how it should be used, and when they invoked a blessing upon it they said thus: The ox's horns go to the spoon-maker; its molar teeth to the mat-maker (for smoothing out the *zozdro* peel); its ears are for making medicine for nettle-rash; its hump for making ointment; its rump to the sovereign; its feet to the oil-maker; its spleen to the old man; its liver to the old woman; its lungs to the son-in-law; its intestines to those who brought the ropes; its neck to him who brought the axe; its haunch to the crier; its tail to the weaver; its suet to the soap-maker; its skin to the drummer; its head to the speech-maker; its eyes to be made into beads (used in the divination); and its hoofs to the gun-maker."

Large herds of cattle are to be seen in the Antsihànaka province, for they are there fattened on the luxuriant pastures of that fertile region; and when travelling there many years ago, I was told of a curious custom formerly practised by people of that province at certain times. They used to choose one of the largest oxen to be found and sharpened his horns to a fine point. After two or three days' continuous drinking, when they had got perfectly maddened with rum and were ready for any foolhardy adventure, a party would rush out to attack this ox, but without any weapons. As the animal became infuriated he, of course, defended himself by goring his enemies, many of whom he seriously hurt and some often killed outright; while the man who escaped without injury was considered as born under a lucky star, and was resorted to by numbers of people to give them charms to protect them from various kinds of calamity.

At certain times in former days, an ox of the largest and finest kind was presented to the sovereign; but it had to be entirely of one colour, and although handsome and fitting in every respect, if there was even one hair differing from the brown, or the black, or the white of the general colour, it would be rejected as unsuitable.

Some idea of the important place oxen take in the thoughts and the talk of the Malagasy may be gained by the fact that there are at least seventy to eighty proverbs and popular sayings in which they are referred to, and an interesting article might be written about these alone.

The ox being so highly esteemed by the Malagasy, it is not strange that its horns, and, indeed, horns in general, are considered also as emblems of power, as we know was and is the case among the Jews and other Eastern peoples. Boys and girls who read their Bibles will recall many passages in the Psalms and the poetical books where horns are referred to; and so among

the Malagasy the horn was a symbol of protection, for the native army was termed *tandroky ny fanjakàna*, i.e. "horns of the kingdom." In Imèrina the long crossed gable-timbers of old-fashioned native houses were called "house horns" (*tandro-tràno*); and when travelling among the southern forest people I found that on the gables of their houses these pieces of wood were exactly shaped like ox-horns. And among the Sihànaka people there used to be fixed near the entrance of every village two or three tall straight trunks of trees, and the top of these had the appearance of an enormous pair of horns, for the fork of a tree was fixed to the pole, and each branch sharpened to a fine point. So again, on the memorial posts used by the Bètsiléó, on a stage at the top were placed a number of ox-skulls, with the horns of the animals killed at the funeral of the deceased person; and in the case of a stone memorial pillar ten pairs of *iron* horns were fixed at the top. All this, you see, confirms what has been said as to the native ideas about horns.

Malagasy boys often play a game in which one of them fastens a pair of wooden horns to his head and rushes about as if he wanted to gore his companions; while they, on the other hand, try to throw a loop of rope round his head, much in the same way as an ox is caught and secured before he is made into beef.

The ox is therefore, you will agree, a very prominent animal in the thoughts and life of the Malagasy, and whether in work, or play, or in their daily speech, is constantly referred to as being among their most valued possessions.



Herd Boys and Oxen

A MADAGASCAR FOREST

ITS SIGHTS AND SOUNDS

COME with me for a stroll in the forest to see a little more of the wonders of the great island. I have spoken of the belt of forest which almost surrounds Madagascar, and is most dense and extensive on its eastern side, and I want here to give you, if possible, some clear idea of what these tropical forests are like.

You all know the beauty of an English park ; those of you who live in London must have often seen one or more of the beautiful parks which are found in so many parts of the immense capital ; and if you live in any large city, there is sure to be a place of the same kind for you to walk in ; while those who live in the country cannot help seeing parks and park-like scenery in almost every part of England, with their elms and oaks, their chestnuts and limes, their beeches and sycamores and firs, in avenues and in clumps, or in single trees. And there is nothing more beautiful in the world than our English parks.

Now you will not find woods like these in Madagascar, and yet there is a beauty of a different kind and a grandeur in the forests there that is very impressive. And perhaps the first thing that strikes one is the crowd of tall trunks growing so closely together, and the height to which they soar, for there is a great struggle for life in these woods, and each tree strives to get up to the light and the heat of the sunshine far aloft. You will notice also that in most cases the tree trunks shoot up like tall columns without branches for a considerable distance, for there is no room for them to spread out their arms around them below in the shade.

Another thing you will observe after you have had time to look carefully at the leaves, namely, that while in English woods you will often see large masses of one kind of tree growing together—oaks in one place, elms in another, beeches in another, and pines or firs in another—in a Madagascar forest, on the contrary, you will often see every different kind of tree close together. Here are trees with light delicate leaves, others with broad glossy leaves, others with thick fleshy deeply-indented leaves, and so on ; and a few have their flowers and fruits growing on the trunks, while most have them on the branches and twigs. You will notice also how different are the trunks of the trees : some are smooth and glossy, others rough and rugged, and many have sharp spines and prickles, which wound our hands if we take hold of them. Some kinds have great buttresses spreading out widely near the ground, while a few have the roots above ground as well as below, so that one can almost walk under the main trunk.

But perhaps that which will strike one in a Madagascar forest as most different from our English woods is the difficulty of getting through the dense

vegetation, and this is caused by the great number of creeping and climbing plants in every direction. They cross and twine and bind the trees together in all directions ; some are as large as a ship's cable, others are like ropes of different sizes, and others are like twine and fine thread. So that if one leaves the narrow woodmen's paths and endeavours to make a new way through the trees, it is almost impossible to go far unless one carries a hatchet or a bill-hook to cut through this tangle of vegetation. Some of these climbing plants are hundreds of feet long and mount up to the top of the tallest trees ; in some cases they so surround a tree that they gradually strangle out the life of their host in their deadly embrace, and become a great tree themselves. Some of them are covered in the hot season with flowers, one especially I remember as bearing a quantity of pale golden-coloured blossoms, which show conspicuously from some distance.

You will not, however, see many flowers on the forest trees—they are high aloft basking in the sunlight ; but you may know of their presence by the ground underneath being strewn with hundreds of petals—pink, blue, scarlet, purple or white. In the warmer parts of the forest near the coast you may see numbers of the waxy-white flowers of the orchids on the tree trunks, and the flowers of one species, which has a very long spur or nectary, shine like stars on the dark bark of the trees. You will also notice that every tree has a little world of other plants growing on it. In the forks of the trees, where the branches give a place for a little soil to accumulate, are masses of hart's-tongue or stag's-horn ferns ; while the different kinds of mosses and lichens and minute ferns are innumerable, and give a home to ants and spiders and other insects.

During the warmer months, the woods are vocal with the notes of birds. Staying near the upper forest one Christmas holiday—the hottest time of the year with us—we sat down on the margin of a stream enjoying the beauty of the woods and especially the singing of the birds. Among these was a species of sun-bird, which has metallic or gem-like plumage ; also a shrike, with long forked tail ; the grey parrot, with a long repeated whistle, as if going up the gamut ; one of the roller-birds, with its prolonged note ending in a sudden drop ; one of the warblers, with a creaky little short note, something like a child's rattle ; together with these sounds was the *kowkow-kow-koo* of the *Kankâfotra* cuckoo, the varied mellow notes of the *Tolôho* cuckoo, the cooing sound of a wood-pigeon, and also the call of one of the hawks.

When speaking of the sounds to be heard in the Madagascar forests, there is one which, when once heard, can never be forgotten, and that is the noise made by the cicada, or *jojèry*, as the Malagasy call it. This is a most strident, shrill, penetrating sound, which seems to deafen one, and it is difficult to believe it is made by an insect only an inch and a half long. A friend of mine says : “ The sound it makes is not a buzz-z exactly, and it is not a

hum-m-m. It is a deafening, unceasing, rasping, irritating monotone." A Malagasy proverb says: "Don't be like the cicada, whose voice fills the whole valley, though the creature itself is but a mouthful." If two or more cicadas are giving out this sound at the same time, the air seems filled with the uproar they make.

Then one is sure to hear the wailing cry of the lemurs, a long-drawn-out, rather melancholy sound, as if of people in distress, or children crying; yet it is no doubt, with these harmless animals, a sign of their enjoyment of life in the upper world of leafage where they live. Of other living creatures (that is, four-footed ones) one sees and hears hardly anything, although there are frequent signs of the presence of wild-boars in the holes they dig everywhere in search of roots. Butterflies are scarce in the woods, except in any cleared spot where they can disport in the sunshine, or over a stream; here one may often see scores of blue-and-black papilios hovering over the water, while there are clouds of small white or yellow or buff butterflies settling on damp sand and sucking up the moisture. Ants, as I have described more fully in a previous section, are everywhere—on the ground, climbing the trees, and dragging other insects, which they have pulled to pieces, to their nests.

In the lower parts of the greater line of forest the Traveller's Tree is often seen among the crowd of trees, and has here to soar to a great height to get its share of light and heat. And all through the forest region several kinds of palm mingle their graceful fronds with the other foliage; the most plentiful species in the higher woods being the bamboo-palm, which is like a bamboo in its slender jointed stem. And the bamboo itself, with its long whip-like curving stem bending over path and stream, is one of the most elegant of all growing things, and with its pale-green clusters of leaves at every joint, gives quite a special character to the scenery in many places.

I can only add here, in speaking of the vegetable life of Madagascar, that on the western side of the island, the forest is less dense and the trees are more scattered. Among these are the tamarind, whose wide-spreading branches cover a great circle of ground around it; the baobab, with a curiously bulky trunk and a very small extent of branch; the fan-palms, growing in clusters, with their tall grey columns supporting a grand crown of huge fan-like leaves; the mango, which grows to a great size, compared with what we see in the colder central provinces; and others which are too numerous to be mentioned in this chapter.

From what I have here tried to describe, you will not be surprised to know how I have always enjoyed travelling through the forests of Madagascar, and exploring their wonderful variety and beauty. How often have I said as I have looked at tree and fern and bamboo and palm and all the wonders of these great woods: "O Lord, how manifold are Thy works, in wisdom hast Thou made them all, the earth is full of Thy riches."

THE MALAGASY "OLD MOORE"

NATIVE DIVINERS AND THEIR TRICKS

DIVINATION, or fortune-telling, was a very important part of Malagasy superstition in former times among the Hovas, and it is probably still practised secretly by many of them who are not real Christians ; and amongst other tribes who are not yet evangelised it is still employed to ascertain future events.

This divination is called *sikidy*, and the diviner himself is the *mpisikidy*, words derived from the Arabs who, many hundred years ago, introduced many good things into Madagascar, and some evil things, of which the *sikidy* was one.

But, you will say, How could they tell, or pretend to tell, what was still in the future ? They had a rather elaborate system of columns divided into a good many squares, each of which had a name which denoted some thing or quality or person, such as house, road, village, dog ; or woman, youth, enemy, etc., and by manipulating a number of beans or seeds of a mimosa tree taken at random from a heap before him, and by certain complicated rules he had to follow, the diviner professed to be able to give a true reply to the questions put to him.



Rakôto visits the Diviner

The old heathen queen of Madagascar, who persecuted the Christian Malagasy so cruelly for a quarter of a century (1836-1861), was a great believer in the *sikidy*; and she used to consult it to know the fortunate day and hour and manner of doing almost everything she did.

If she were going a long or short journey, the day and the hour of starting, the road she was to take, the people who were to follow her, and what she was to do—everything, in fact, and the smallest detail of her life—all was decided by the divination for her guidance.

And in the same way it is still consulted by numbers of Malagasy. If they are ill, they ask of it what medicine they shall take, what food they should eat and what they should avoid; if they are going to do some trading, they ask whether it will bring them profit; if they have to bury a relative, they ask the day and the hour which will be fortunate, so that the deceased person may rest quietly in his grave, and not return to trouble the living.

Look at the picture. Here is the diviner in the centre, sitting on the matted floor in native fashion.

On the mat before him he has made a number of lines and squares (or possibly he knows them so well that he has no need of marked lines), and in those squares he has placed a number of beans or *jàno* seeds from a little heap of them close by. On the left of the picture is little Rakôto,* standing or partly sitting on the wooden rice-mortar, in which the rice is pounded every day for the morning and evening meals with the pestle which he is taking hold of.

On the other side is his father and his sister, who have brought him to ask the diviner what they shall do to make him well; for the little chap has been poorly for a long time, and nothing they have done for him seems to make him any better.

They have probably given him some native remedies, which are mostly useless and often harmful; and now I am afraid that the diviner will prescribe some stupid proceeding, or the giving of some nauseous stuff, which will do poor little Rakôto no good, and possibly may do him much injury.

What odd ideas the Malagasy often have about medicine! Mr. Pearse had given some medicine to a person who was ill, and so he called in a few days later to see how the patient was going on, and whether he was getting better. "Did you get the medicine?" he asked. "Oh, yes," said his wife. "And has it done him good, so that I may send him some more?" "But he doesn't need any more, for there it is still," said the wife; and sure enough, hung up in the sacred corner of the house (the north-east, where the idol used to be kept and prayers offered to it) was Mr. Pearse's bottle of medicine,

* Pronounced Ra-kôo-too.

untouched, because the people thought it was an *òdy*, or charm, and would do the sick person good if it was merely looked at !

On another occasion Mr. Pearse had given some medicine to a sick man, and had instructed the relatives to give it to him so many times a day, weighing it out in the little money-scales with so many grains of rice. Calling in a day or two afterwards to ask the effect of the remedy, he inquired if it had been taken as ordered. "Oh, yes," said the brother, "he has taken the medicine and the weights too !" Fortunately, the "weights" were harmless, being only unhusked rice grains. Had they been the iron money-weights, the dose might have had more serious effects.

Dr. Davidson found that a native doctor had been professing to cure some serious complaints by burning round holes, the size of a shilling, on the unfortunate sufferer's body, in a number of places ! The remedy was surely then worse than the disease.

Let us hope that little Rakòto was sooner or later taken to a good and kind medical missionary, or to a Malagasy who had had a proper medical training, either of whom would give him medicine and advice that would probably soon put him to rights ; and from whom he would most likely hear a few words about Jesus, the Good Physician, and the loving Friend of all children, whether English or Malagasy.

HUMAN INHABITANTS OF MADAGASCAR

MOST of this book is about the wonderful and very interesting living creatures which inhabit "the Great African Island," as well as something about certain of the more remarkable trees and plants which grow there. As we have seen, these are all well worth our examination and study, because they are all the handiwork of our Father in Heaven ; for every lovely flower, or stately tree, or brilliant insect, or beautiful animal or bird, is "a thought of God." And yet these are not the things about which a missionary spends his chief thoughts, or time, or strength ; his main business is with the *people* of Madagascar ; to enlighten their minds, to help them to put away evil habits and customs, and, above all, to lead them to the Lord Jesus Christ as their Saviour and Redeemer.

THE MALAGASY : WHO ARE THEY ? AND WHERE DO THEY COME FROM ?

It is not at all remarkable that in this great island, four times as large as England and Wales, there are many separate tribes, which differ one from the other in many respects, although they speak substantially one language—with a variety of dialects—and they all come from different islands of the great Pacific Ocean. The tribe of Malagasy we know best are called HOVA, and inhabit the central province of Imèrina. Among them the first messengers of the London Missionary Society began their work a hundred years ago ; and among the Hova the Gospel has for long had a greater influence than in any other part of the great island. They are not black people, but are brown in colour, some of them as fair as the people of South Europe, while others are darker. Until the French conquest of Madagascar in 1895, the Hova were the dominant race, and had been so for a hundred years before, their sovereigns claiming to be kings or queens of the whole island. They are still the most civilised, and probably the most intelligent, of all the Malagasy peoples. These Hova and some of the neighbouring tribes came, many hundred years ago, from several of the larger Malayan islands—Sumatra, Java, Borneo and others—and their language is closely connected with the speech of those islands, as well as with that of the small groups of Eastern Polynesia—Samoa, Tahiti, Rarotonga, etc., and also with the language of the Sandwich Islanders and the Maoris of New Zealand.

THE MALAGASY, WHO ARE THEY ?

But all around the central province of Imèrina are other Malagasy tribes, who differ a good deal from the Hova in features and—with some exceptions, owing to Arab or European blood—in colour, for they are much darker. They have frizzly, not woolly, black hair, while the Hova have straight and smooth hair. These darker tribes are not African in origin, but are connected with the islanders of Western Polynesia, in the New Hebrides, Fiji and Loyalty groups. There are numerous subdivisions, but the principal tribes are the *Sàkalàva*, all along the western coast of Madagascar; the *Bétsimisàraka*, along a large part of the eastern coast; the *Sihànaka* and the *Tankàrana* to the north; and the *Bétsiléó*, the *Bàra*, the *Tanàla* and others to the south. Of these the *Sàkalàva* are the strongest and finest-looking people, but they are the least civilised, and at present the least Christianised of the outlying tribes. The *Bétsiléó* come next to the Hova in their reception of Christianity; but mission work is now making much progress also among the southern peoples through the efforts of three Norwegian Lutheran societies.

THE STORY OF THE MEN WHO WENT TO TEACH THE MALAGASY

When the first L.M.S. missionaries to Madagascar, Messrs. Bevan and Jones, arrived at Mauritius, on their way to their destination, and told the planters there that they were going to teach the Malagasy, they were laughed to scorn. "Teach the Malagasy!" they said, "Why, you might as well try to teach the monkeys [they meant the lemurs] in the forests." But the missionaries replied that they believed the Malagasy had minds and souls just as much as Europeans, and that, at any rate, they were going to try to instruct them. So the two men crossed the 550 miles of sea to Tamatave, and got together a few native children, and began teaching them their letters; and they were surprised and delighted to see how bright and intelligent those Malagasy boys and girls were. Mr. Bevan and Mr. Jones did not stay in Madagascar then for more than five weeks, but in that brief time several of their pupils could read short words, so that the missionaries felt no doubt as to the mental capacity of the people. They returned to Port Louis to fetch their wives and infant children, and said to the Mauritius planters: "Those Malagasy children are quite as quick to learn as any of your own; and we are going back to Madagascar to teach them and their fathers and mothers as well."

This is not the place to tell of the sad beginning of their work; how five of that little party of six died within a month or two; how Mr. Jones alone survived; how he went back to Mauritius for a few months; how he went up to the capital in October, 1820; and how he began work there by teaching *three boys*. That was the humble commencement of the Mission which has effected such wonderful changes in Madagascar during the past hundred years.

THE STORY OF TWO SMALL BARS OF SOAP

After the first missionaries to Madagascar had been allowed to go on with their work without interruption for about eleven or twelve years, there seemed much probability of it being stopped altogether; for the heathen queen, Ranavalona I. had become very uneasy and indeed angry at the progress of the new religion among her subjects. The missionaries had reduced the Malagasy language to a written form; they had translated and printed the New Testament, and were proceeding with the Old Testament also; they had established schools in all the chief towns, in which several thousand children were being taught and receiving a good Christian education; and they had also instructed numbers of Malagasy workmen in improved methods of carpentry and iron-work, in tanning and leather dressing, in preparing lime, and in making bricks and tiles, etc. And many Malagasy had seen the folly of idol worship and belief in charms and other superstitions, and were beginning to worship the true God and the Lord Jesus Christ. These latter results of mission work were very displeasing to the queen, and she had almost decided to send the missionaries away and forbid all Christian worship among her people.

But she remembered that they had taught the Malagasy many useful arts, as just mentioned, so she sent to ask the missionaries if there was anything else they could teach her subjects, for instance, could they teach them how to make soap? Now, this was a thing which neither Mr. Jones, or Mr. Griffiths, or Mr. Johns knew anything about; but among the artisan missionaries there was one named Cameron, who was originally a carpenter but had taught himself many other branches of useful knowledge; so they turned to him and said: "Mr. Cameron, could you teach them how to do it?" He replied, "Let the queen's messengers come again in a week's time, and I will see what can be done." So he went to the market and got fat and suet from the butchers; he made alkali from wood ashes, and after a few experiments he managed to produce two small bars of tolerably good-looking soap. When the queen saw these she was very pleased, and immediately made an agreement with Mr. Cameron to erect a small factory, and to teach a number of Malagasy youths the art and mystery of soap manufacture.

So the missionaries were allowed to stay on for two or three years more; and during that time they completed the translation of the Bible; they finished dictionaries and many other books; the influence of Christianity grew stronger and stronger, and they were able to instruct larger numbers of the Malagasy in the faith of the Gospel, and to prepare them for the fiery trial of persecution which began on March 1st, 1835. These were the great blessings which resulted from the making of "two small bars of soap." And so God often uses apparently small and weak things to accomplish great and important things.

THE STORY OF A "SCRAP OF PAPER"

Many years ago I took part with several of my missionary brethren in Madagascar in the revision of our Malagasy Bible, as we endeavoured to make it a more accurate translation of the original Hebrew and Greek, and to put many of its verses into plainer language for the people. We not only met together very frequently to do this work, but we had to go through the proof-sheets at home, with our native helpers, before meeting in committee. To help me in this duty I had a good man named Rainivèlo, who came every week to my house. One day, after we had carefully gone through the proof-sheets, I said, "Rainivèlo, how did you become a Christian? Was it in the time of the first missionaries?" He replied, "No; I was still quite a child when they left Madagascar, and it was several years after that time. And it came about in this way: I was one day walking along one of the streets in the capital, and I saw on the ground a small piece of printed paper. I took it up and read it as I walked; it was half a leaf torn out of the Book of Psalms, and, like so many of the Psalms, it spoke of the glory and the wisdom and the goodness of Jehovah. Now I knew that this was the name of the God worshipped by the Christians, and I was so powerfully impressed by what I read that I determined to find out more about Jehovah and His worship.

"To accomplish this, I went to see a friend of mine, who I suspected was a Christian, to ask about Jehovah; and when he saw I was in earnest—for people had to be extremely cautious in those days, lest they should be betrayed—he sat down and told me about Jehovah, and also about Jesus Christ and what He had done for men. I had many talks with him, and the result was that I felt convinced that this Jesus Christ was Lord and Master, and that I ought to serve Him; and that He was Saviour and Redeemer and could save *me*. And so I resolved to serve Him, and to trust in Him for salvation; and I have tried to do this ever since."

This was Rainivèlo's story, and remember that that was a time of persecution, when it was a very dangerous thing for anyone to be known or suspected to be a Christian; yet this good man felt that whatever it might cost he must obey and serve the Lord Christ, and believe in His power and willingness to save. And all this, you see, was the result of the reading of a little "scrap of paper"; but it was a fragment of God's Book, made mighty to win a human heart and bring it into obedience to Christ. And so God honours His own Word.

A STORY OF PRAYER AMONG THE HEATHEN MALAGASY

It was said of one of old, when he was wonderfully changed from a self-righteous and persecuting Pharisee into a humble and self-denying and zealous apostle, "Behold, he prayeth!" And it is worthy of note that from its first

introduction into Madagascar the Christian religion has always been known as "the praying" religion; and Christian people as "the praying ones."

Prayer, however, was not absolutely unknown in Malagasy heathenism; but it was a rare thing, a practice only employed at certain times and on solemn occasions, especially in times of war and difficulty and distress. I well remember at the time of the second Franco-Malagasy war (in 1895), how, as the foreign troops were slowly advancing up the country, the Malagasy women of each village used to gather together morning and evening, and with spear-like wands in their hands, with passion in their voices and with fervour in their eyes, sent up their prayer-songs or *ràry*, to God, praying for the protection of their fathers and brothers, and husbands and sons, against the invaders, somewhat in this fashion:

"Protect Thou them, O Great Spirit;
May the spear have no power to wound them,
May the rifle-bullet do them no harm;
May they conquer their enemies!
Whether they fight by night or by day,
May they be helped to defeat our foes!"

Still, such prayers, and all Malagasy prayer in former times, were spasmodic and occasional, very different from what the Christian poet described when he wrote:

"Prayer is the Christian's vital breath,
The Christian's native air;
His watchword at the gates of death;
He enters heaven by prayer."

Yes, I well remember the weird, wailing sound of those women's voices as they sang their prayer-songs in early morning, as I passed by some of the villages in my mission district.

We know now that it was not the will of God that those prayers should be answered, for the foreign troops reached the capital on the last day of September, and from that date Madagascar became a French protectorate and, during the following year, a French colony. European control has brought many advantages to the Malagasy, especially in material matters. It has stopped all internal war between the different tribes; it has abolished slavery; it has made roads all over the island; it has introduced the motor-car, the railway, and the telegraph; it has promoted commerce and civilization, and it has established courts of justice in every province. It has not always been friendly to missionary effort, but we may hope that the French authorities will see more and more clearly that in proportion as the Malagasy people become Christianized, so will they become intelligent and industrious, and therefore good subjects of France, and will work together with their rulers for the true advancement of their country.

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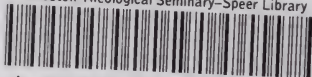
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